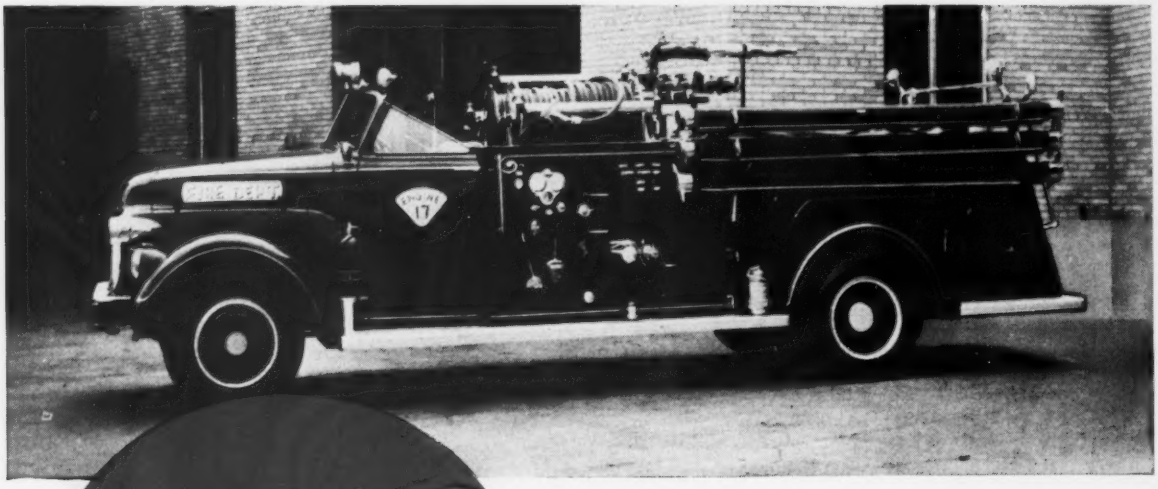
DECEMBER 1953

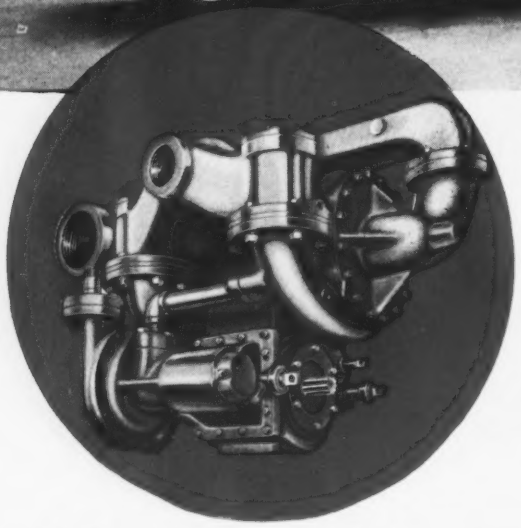
FIREMEN

FIFTY-EIGHTH YEAR · NATIONAL FIRE PROTECTION ASSOCIATION

VOLUME 20, NUMBER 12, COPYRIGHT 1953 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

For power and versatility





THE CITY OF ROCHESTER selects BARTON-AMERICAN DUPLEX-MULTISTAGE FIRE PUMPS

In completing an apparatus modernization program, the Bureau of Fire, Rochester, New York, recently built four pumpers designed by Deputy Chief Louis E. Vogt.

To get the fire-fighting power and versatility he wanted, Chief Vogt selected Barton-American Duplex-Multistage Pumps . . . a strong testimony to their superiority in design and construction.

At moderate engine speeds, the Duplex-Multistage gives high volume at normal pressure, normal high pressures, and extremely high pressures for fog guns. The impellers are independently shafted and geared to run alone or together. All bearings run in automotive-type transmission housing with one-point lubrication.

These and other exclusive design features will give *you* extra fire-fighting flexibility, too. Get all the details on Barton-American Fire Pumps. Contact our representative in your area.

WRITE FOR BULLETINS 8733 • 8734

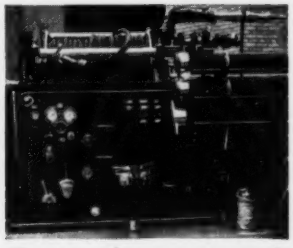
AMERICAN-MARSH PUMPS

BATTLE CREEK MICHIGAN

In Canada:

American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

With handy vacuum clutch control switch on dash, driver shifts power from road to pump before moving from his seat.



Close-up of pump operator's control panel shows how all controls are grouped for fast, efficient operation.

Metcalf UNIFORM FABRICS

Standard fabrics for over eighty years

UNIFORM CLOTH
METCALF BROS. & CO., INC.

SPECIFY

386

STANDARD SERGES
FROM 12 TO 18 OZ.

★

STANDARD TROPICALS
FOR SHIRTS
All in Premier 386 Quality

★

OVERCOATINGS
In 20 and 30 oz. weights

★

ELASTIQUES

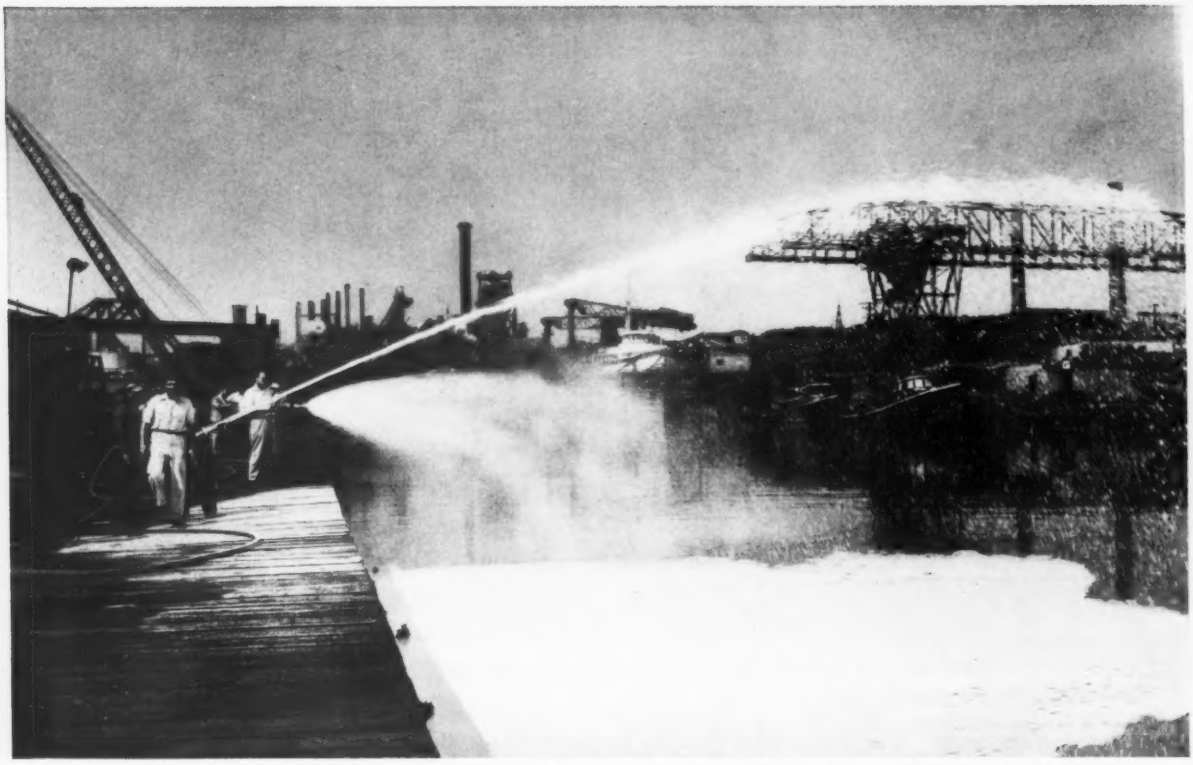
★

Metcalf Fabrics are used by Fire departments of leading cities

Sample Brochure Upon Request

METCALF BROS. & CO., INC.
45 EAST 17th STREET, NEW YORK CITY

F O R U N I F O R M S A T I S F A C T I O N



Two methods of discharging Rockwood FOAM include the solid stream (foreground) and the broader FogFOAM pattern. The nozzles used are described and illustrated below. Note the FOAM blanket on the surface of the water.

Covering the waterfront . . . with protection

Versatility is one of the big advantages Rockwood FogFOAM nozzles bring to waterfront fire-fighting. Depending on the type of nozzle equipment, you can discharge either a solid FOAM stream many feet in length, or a highly heat absorbent FogFOAM pattern for shorter distances.

Either way you get a fast covering blanket of FogFOAM that effectively smothers fires in gasoline, benzol and other flammable liquids. And the variety of Rockwood equipment enables you to reach into the interiors of tankers, storage tanks, etc., as well as to cover large, open areas of burning liquids.

Just three parts of Rockwood Double Strength FOAM mixed with 97 of water forms the quick-acting blanket that flows freely around obstructions, seals off combustible vapors and quickly re-seals if broken.

In your own community, meet the threat of flammable liquid fires with Rockwood FOAM — an outstanding example of how Rockwood engineers water to cut fire losses.

ROCKWOOD SPRINKLER COMPANY

Engineers Water . . . to Cut Fire Losses

This Fast-Flowing FOAM Blanket spreads over flammable liquids, sealing them off and smothering flames. Available in single and double strength for use with Rockwood devices, FOAM saves vital time by its speedy, thorough action — saves cost of use, storage space and shipping costs because it's concentrated.

Two Nozzle Attachments. Above, Rockwood Type FFF FogFOAM nozzle, equipped with long shaper, discharges a solid FOAM stream up to 45 feet distance. Below, with a FogFOAM screen, it discharges a pattern with a range of 30 feet. Suction draws FOAM liquid through a tube at nozzle base.

SEND FOR THIS INFORMATIVE BOOKLET

ROCKWOOD SPRINKLER COMPANY
Portable Fire Protection Division
88 Harlow Street
Worcester 5, Mass.

Please send me your illustrated booklet on Rockwood fire-fighting products.

Name .....

Title .....

Company .....

Street .....

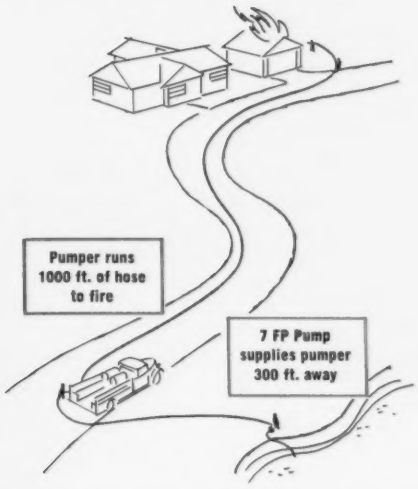
City .....

Zone ..... State .....

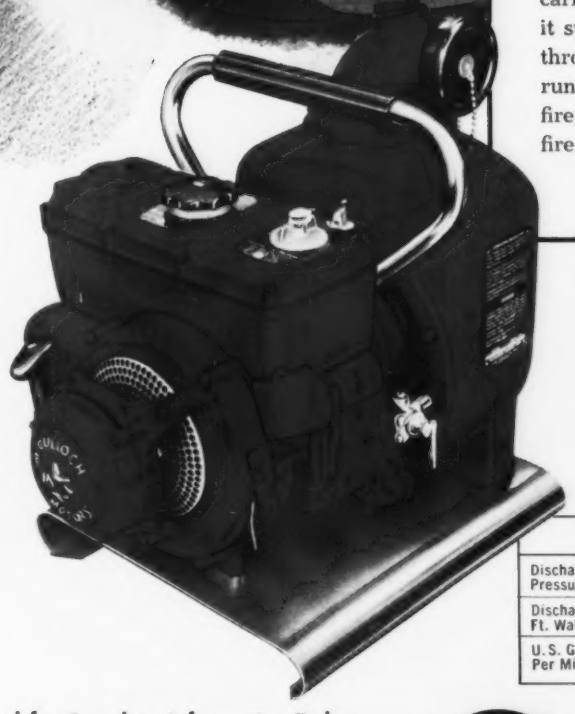
NEW WAYS TO FIGHT BLAZE!
number 6 in a series

NEW McCULLOCH PORTABLE PUMP

Quells Garage Fire!



Garage on fire! Stream is located 300 feet off road, in swampy land. One man carries a McCulloch 7 FP pump to stream; it supplies pumper on road with 200 gpm through a 3 inch hose, free flow. Pumper runs 1000 feet of hose down road to garage fire, which throws 200 gpm at 45 psi on the fire through a 1 inch nozzle.



Model 7 FP McCulloch

CENTRIFUGAL FIRE PUMP

Weighs only 57 lb complete!
Delivers 250 gpm!
Develops pressures over 100 psi!
Primes at 25 ft suction lift!
Delivers fog, stream, or foam!

(all measurements in U. S. gallons)

PERFORMANCE CHART (with 10-foot suction lift)

Discharge Pressure PSI	10	20	30	40	50	60	70	80	90	100
Discharge Hd. Ft. Water	23	46	69	92	115	138	161	184	207	231
U. S. Gal. Per Minute	250	227	197	164	130	101	78	54	38	25

Send for Complete Information Today...

NATIONWIDE SALES AND SERVICE

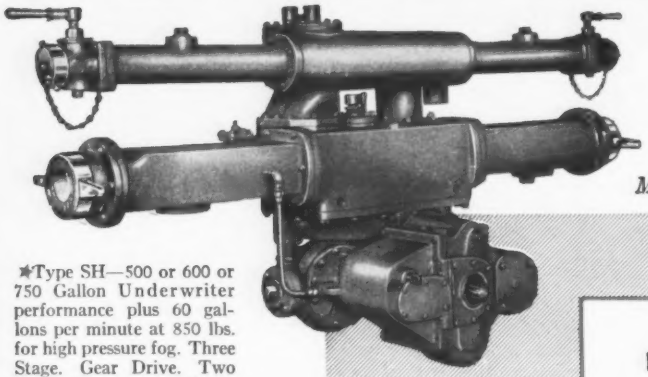
5-3206

McCULLOCH

McCulloch Motors Corporation, Los Angeles 45, California
Export Dept.: 301 Clay St., San Francisco 11, Calif., U.S.A.
Canadian Distributor: 220 W. First Ave., Vancouver, B.C.
525 First Ave., Quebec, P.Q. • 861 Lansdowne St., Peterboro, Ontario

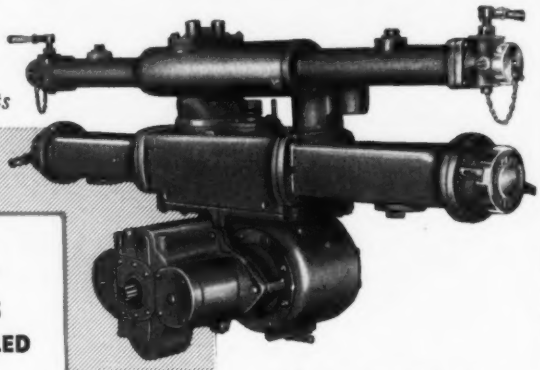
CHAMPION FIRE PUMPS

Write for Booklet on Fire Trucks and Pumps



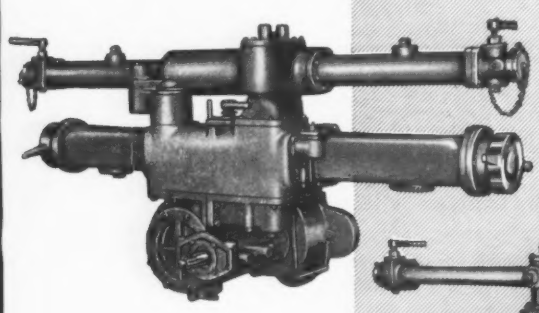
★Type SH—500 or 600 or 750 Gallon Underwriter performance plus 60 gallons per minute at 850 lbs. for high pressure fog. Three Stage. Gear Drive. Two suction inlets, 4", 4½" or 5". Two 2½" discharge valves (3 on 750 Pump).

Midship Mounts



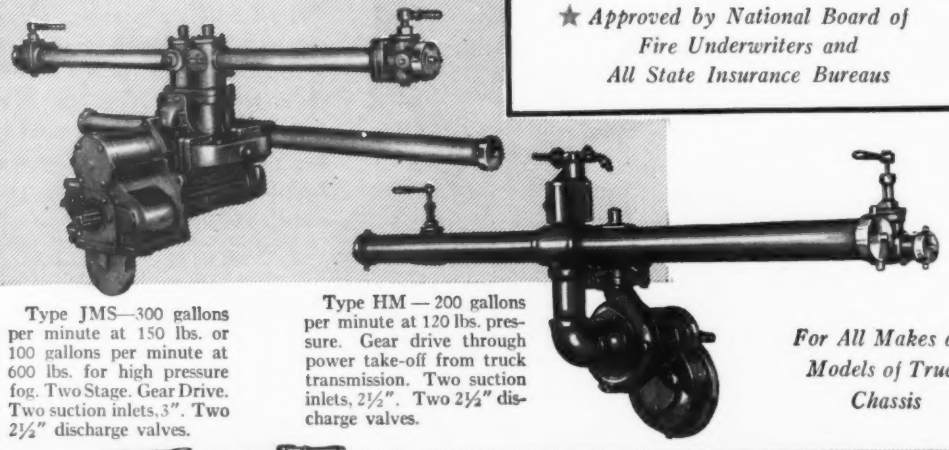
DARLEY CHAMPIONS ARE UNEXCELLED FOR PERFORMANCE STAMINA ENGINEERING

★Type S—Capacities 500-600-750 gallons per minute at 120 lbs. pressure. Two Stage. Gear Drive. Two suction inlets, 4", 4½" or 5". Two 2½" discharge valves. (3 on 750 Pumps).



★Type M — Capacities 400-500 gallons at 120 lbs. Gear Drive. Two suction inlets, 3½" or 4". Two 2½" discharge valves.

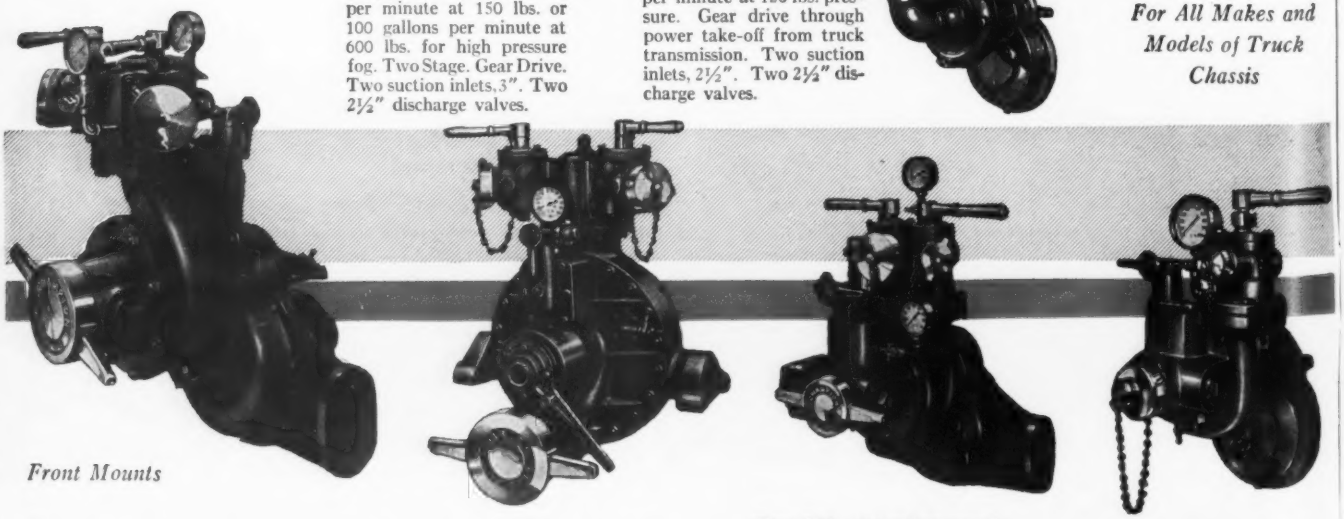
★ *Approved by National Board of Fire Underwriters and All State Insurance Bureaus*



Type JMS—300 gallons per minute at 150 lbs. or 100 gallons per minute at 600 lbs. for high pressure fog. Two Stage. Gear Drive. Two suction inlets, 3". Two 2½" discharge valves.

Type HM — 200 gallons per minute at 120 lbs. pressure. Gear drive through power take-off from truck transmission. Two suction inlets, 2½". Two 2½" discharge valves.

For All Makes and Models of Truck Chassis



Front Mounts

★Type KF—Capacities 400-500-600 gallons at 120 lbs. Gear Drive. 3½", 4", 4½" suction. Two 2½" discharge valves.

★ Type F — Capacities 400-500 gallons at 120 lbs. Direct Drive. 3½, 4" suction. Two 2½" discharge valves.

Type JFS—300 gallons per minute at 150 lbs. Pressures up to 1000 lbs. Two Stage. Gear Drive. 3" suction. One 2½" and two 1½" discharge valves.

Type H—100 gallons per minute at 500 lbs. pressure. Gear Drive. 2½" suction inlet. 1½" discharge valve.

W. S. DARLEY & CO.

Established 1908

Chicago 12

Firemen

Volume 20 — Number 12

WARREN Y. KIMBALL, EDITOR
PAUL R. LYONS, ASSOCIATE EDITOR
HENRY S. GERE, ADVERTISING MANAGER

Published monthly for the fire service members of the
NATIONAL FIRE PROTECTION ASSOCIATION

A VOLUNTARY NON-PROFIT ORGANIZATION
60 BATTERYMARCH ST., BOSTON 10, MASS.

PERCY BUGBEE	GENERAL MANAGER
ROBERT S. MOULTON	TECHNICAL SECRETARY
HORATIO BOND	CHIEF ENGINEER
CHARLES S. MORGAN	ASSISTANT GENERAL MANAGER
GEORGE H. TRYON, III	ASSISTANT TECHNICAL SECRETARY
CHESTER I. BABCOCK	FIRE RECORD MANAGER
RICHARD E. STEVENS	FIRE RECORD DEPARTMENT
MILES E. WOODWORTH	FLAMMABLE LIQUIDS ENGINEER
CLARK F. JONES	GASES ENGINEER
ROBERT W. SCHUETTE	PUBLIC RELATIONS MANAGER

Contents for December 1953

	Page
A Time-Motion Study of 1½-in. Hose Evolution by Robert Alan Sloan	1
NFPA Regional Meeting	11
Salt Lake City Fire Department, Part II	12
Rural Fire Department Inspections	15
Fire at State University of Iowa	17
Getting That "Much-Needed Lift"	18
San Diego Utilizes "Eductors"	19
Fires in the News	21
Pumpers Are More Than Hose Carriers	22
Membership Report	25
IAFC General Manager	26
Oklahoma A & M Fire College	26
What's New in Fire Equipment?	30
Index to Advertisers	30

Cover Picture

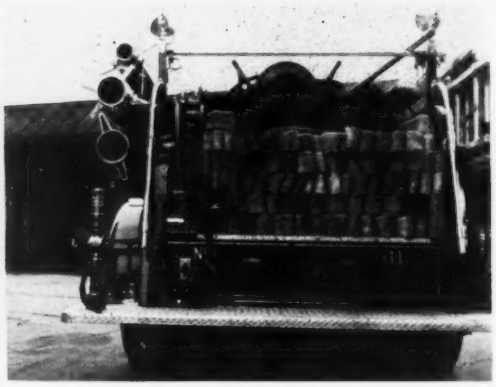
Fortunately the disconsolate boy on this month's cover has only the loss of his Christmas presents to grieve. In some homes during the coming holiday season there will be far greater property damage, and, it may be predicted, loss of life because of Christmas tree fires. Readers are urged to warn people in their communities against the tragic possibilities of such needless loss. The NFPA Christmas folder, also illustrated on the cover, outlines simple fire-safe practices for the holiday season. The name of your fire department or business concern may be imprinted in prominent position before you distribute the folder to home owners. Copies may be obtained for $2.50 per hundred, $20 per thousand. (*Cover picture by Associated Press Wirephoto.*)

Practical Examinations

Mark Twain said: "Everyone talks about the weather but nobody does anything about it." The same thing seems to be true about many fire department promotional examinations. For years fire fighters have griped that promotional examinations favor the theorist above the smoke eater with the practical fire ground experience and know-how. A case in point was an examination question given to members of a one-company fire department which normally responds with six or seven men. Members who told how they would handle a rather routine fire with their available equipment made a very poor showing. Members that said they would fight the fire with a dozen to sixteen hose streams and numerous deck pipes had the winning marks. No credit or consideration was given to the fact that in the average community including the one in question, the limitations of water supply are a prime consideration in fire fighting. In a fire, such as the hypothetical case in question, it would be extremely unlikely that the water supply would be sufficient for more than three or four good streams. The good officer would be one who could best place those streams to control the fire with the manpower and equipment at hand or at least available in time to be of practical use. An example of this was a recent fire in another community which happened to be a larger city. The first chief officer to arrive found two good pumper streams in service. A glance at the pumper gages showed that all of the water in the main was being used so he instructed the pump operator not to permit more lines to be connected. The two streams were doing effective work on the fire when suddenly they petered out. A quick check showed that a third line had been ordered by a deputy chief on arrival. This resulted in three ineffective streams even though the pumping capacity and manpower on hand would have permitted ten or a dozen streams had water been available. This merely reflects the fact that practical knowledge of fireground operations is overshadowed by an examination technique that rewards the impractical.

One remedy for this situation is more intensive practical training in fireground tactics for officers and potential officers. These training records should be part of the personnel record for each individual that would be a prerequisite toward promotion. The subjects are not difficult to master on a practical fireground basis. A man is hardly suitable for tactical fireground command who does not know how to get the most out of existing pumps and water supplies. Thus each candidate would go into the examination room with points or credits based upon his proven experience or ability demonstrated by operational experience and training within his own department. Questions might be asked to determine his additional background or knowledge and experience that would make the man a superior leader, but he would not be eligible for promotion or at least would be at a competitive disadvantage if his own record of training and experience within the department was not at a reasonably high level. Some departments do give credit for years of experience or "seniority." The importance of experience gained in years of practical fire fighting cannot be safely ignored. However, it is only fair to all members to also give them credit for the mastery of the use of fire department equipment and fire fighting techniques. A few departments have specified that candidates must have "engine, truck, and squad experience." While this provides a diversity of fire ground experience, a better approach is the integration of the department's training schedule or program with the need for developing fire fighters, apparatus operators, and officers who are thoroughly competent and well grounded in the essential phases of fire fighting.

Group cooperating in the study. (Center) Chief John F. Finnegan, Chief of Bureau of Fire, Richmond. (Manning the 1½-in. lines, l. to r): Lieut. Dick Gillman, Bob Sloan (author), Capt. John Finnegan, Jr., and Chief Drillmaster Edgar A. Sherry. These latter officers head the Fire Bureau's Training Division.



Rear of pumper used as a hose wagon in the study showing two 150 ft. 1½-inch leader lines connected to wye in rear step. It is recommended that wye be secured to a special block by a spring clamp. The block would be approximately flush with the rear step.

A Time-Motion Study of 1½-in. Hose Evolution with a Two-Piece Engine Company

by Robert Alan Sloan

HOW can your work be made easier and your job more effective, when performing 1½-in. hose evolutions? At least a partial answer to that problem may involve assignment of specific functions or duties to each job position in an engine company, pre-positioning of a gated wye (among other tools), and a rearrangement of pump intake valves, hose loads, and booster reel.

This problem of determining a more effective method of placing in service preconnected 1½-in. lines has been my topic of study for several months. It was originally suggested by Mr. Warren Y. Kimball, Manager, NFPA Fire Services Department, as a desirable one to which to apply the time-tested motion economy methods used by industry for so many years. At the time of Mr. Kimball's suggestion, I was studying the principles of motion analysis and economy as taught by Prof. John K. Immer of The American University, Washington, D. C. You may recognize Professor Immer as the founder and director of "International Work Saving Week."

My very deep interest in the fire-fighting profession prompted me this past spring to attempt to apply the accepted procedures of work saving in industry to our work of fire fighting. I took Mr. Kimball's suggestion and my interest to my good friends Chief J. F. Finnegan, and Drillmaster Chief Edgar A. Sherry of the Richmond, Virginia, Bureau of Fire and asked them for their help in implementing my investigation of preconnected 1½-in. hose evolutions. These gentlemen's comments, in effect, were as follows: "We are interested in helping with any study which will contribute to the advancement of the science of fire fighting. You are welcome to use our equipment in your study."

ED. NOTE: *This article reporting a motion study of a fire department hose layout is digested from Mr. Sloan's manuscript which details the tasks done by each fire fighter in making the time-motion study of this evolution. The study also included a detailed discussion of friction loss and flow characteristics of various sizes of fire hose. While the study was conducted on the basis of an engine company operating two pieces of apparatus, i.e. (separate pumper and hose trucks) the technique used in this analysis should be equally useful in any similar fire fighting operation requiring teamwork.*

MANY wasteful motions are usually found when equipment is placed in operation at the scene of a fire. I firmly believe that this is because each man in a given position does not clearly understand the duties of his position. I cannot stress too heavily the concept of position assignment of duties as compared with the personal assignment of duties. It makes no difference if John Doe is in position No. 1 today and position No. 4 tomorrow. John's responsibilities will vary as he changes from position to position, but not so the functions or duties of the positions. The activities of position No. 1 and position No. 4 remain constant.

A full understanding of the concept of position assignment of duties is mandatory to the most effective utilization of manpower. When no position duties are assigned, the typical situation develops of one man preparing to perform a task which another fireman has already accomplished. In other cases, an even worse development occurs — the job does not get done at all because each man thought the other was going to do it and neither did. It is, then, through assignment of duties to positions as well as the pre-positioning of tools that I have synthesized the method presented in this report.

PERHAPS one of the most important virtues of applying position assignment duties is the rational basis position assignment offers as justification for departmental budgets. Based on the position assignment of duties presented in later sections of this study, you can-

MOTION STUDY AND SUGGESTED POSITION ASSIGNMENT OF DUTIES USING TWO PIECE, FIVE MEN ENGINE COMPANY IN MAKING 1½-IN. HOSE LAYOUT

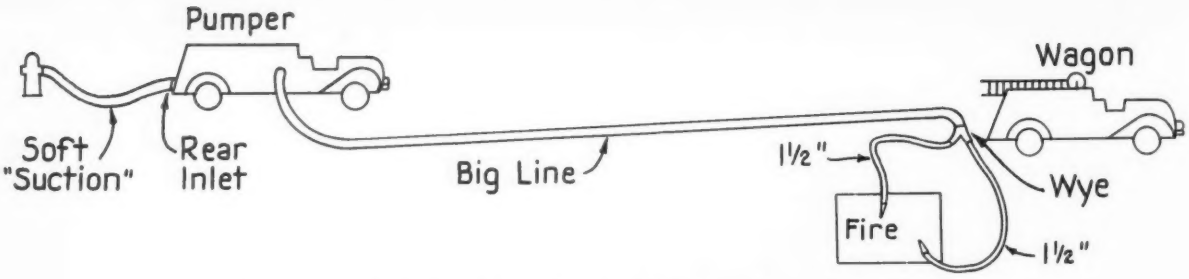
Key: ▶ movement — O operation — D delay — □ inspection

Position (1) engineer	Position (2) layout man	Position (3) ¾-in or 1-in lineman	Position (4) wagon driver	Position (5) company commanding officer
O Put engine pump in gear.	O Grab an arm load of big hose.	O Grab ¾-in. or 1-in. line nozzle.	O Put wagon pump in gear.	Scene of fire with man ▶ in position (3) and ¾-in. or 1-in. line.
▶ Out of seat to preconnected suction hose at rear intake.	▶ Off rear step to 2½-in. outlet on engine.	▶ Off rear step following man in position (5) to investigate cause for alarm.	▶ Out of seat to pump controls.	□ For fire.
O Unwrap suction hose.	O Connect big line to engine outlet.	□ For fire.	O Build up required pressure in pump for booster line.	O Discover fire and instruct man in position (3) what to do with ¾-in. line.
▶ Plug with suction hose.	▶ Wagon.	Discover fire and fight with booster line until man can no longer remain in the area of the fire or until man in position (4) arrives with 1½-in. line [position (3) partner in two-man team with position (4)].	▶ Break big line.	▶ Wagon.
O Uncap plug outlet.	Upon instructions from man in position (5), grab 1½-in. line about O 50 ft. behind tip [position (2) partner in two-man team with position (5)].	▶ Return to wagon.	O Connect big line to wye held by clamp on block on right side of rear step on wagon.	O Instruct man in position (4) to take 1½-in. line and replace man in position (3).
O Connect suction hose to outlet.	▶ Follow man in position (5) to fire with 1½-in. hose.	Signal man in position O (1) number of feet big hose laid out and request water.	O Remove wye from block.	Instruct man in position (2) to grab 1½-in. O line about 50 ft. from tip and to follow man in position (5).
O Remove plug wrench from suction hose and place wrench on plug gate valve.	▶ After transporting hose to fire, return to wagon.	Acknowledge or — if O necessary — correct reply of man in position (1).	Upon instruction from man in position (5), O grab 1½-in. line [position (4) partner in two-man team with position (3)].	O Grab nozzle on 1½-in. line.
O Turn on water at plug.	Signal man in position (1) that another 1½-in. O line from the same big line is to be placed in operation.	▶ Wye.	To fire with 1½-in. line ▶ and replace man in position (3).	▶ Fire.
▶ 2½-in. outlet from which is laid supply hose.	Acknowledge or — if O necessary — correct reply of man in position (1).	Open 1½-in. wye gate from which is connected O line this man will use with man in position (4).	Continue to use ¾-in. or 1-in. line belonging to man in position (3) until O water arrives in 1½-in. line, shut off booster nozzle and drop ¾-in. or 1-in. line on floor.	Instruct man in position (2) to return to the wagon and signal man O in position (1) that another 1½-in. line from the same big line is to be put into operation.
If no other company has O yet arrived, when they do, connect their big line to an engine outlet.	▶ Wye.	▶ Wagon pump.	O Fight fire with 1½-in. line.	D For water
Receive and acknowledge message indicating O length of big line laid out and request for water.	Open 1½-in. wye gate O from which is connected line this man will use with man in position (5).	10 seconds after water O enters 1½-in. line, turn off wagon pump.		O Fight fire with 1½-in. line.
O Open discharge gate of big line.	▶ Man in position (5).	▶ Man in position (4).		
▶ Pump controls.	O Fight fire with 1½-in. line.	O Fight fire with 1½-in. line.		
O Build up pressure in pump.				
▶ Suction support.				
O Pick up support.				
▶ Mid point of suction line.				
O Place support under mid point of suction line.				
▶ Pump controls.				
D For further orders.				

SUMMARY OF EVOLUTIONS

	Position (1)	Position (2)	Position (3)	Position (4)	Position (5)
▶	7	6	5	3	3
O	12	7	7	8	6
D	1	0	0	0	1
□	0	0	1	0	1
TOTAL	20	13	13	11	11

(1) This man drives the engine and operates its pumps. (2) This man rides on the rear step of the wagon on the opposite side from the plug being used. (3) This man rides on the rear step of the wagon on the side next to the plug being used. (4) This man rides in the cab of the wagon as its driver. (5) This man is the commanding officer of the company.



Subject of study: layout for supplying 1½-in. lines with two-piece, five-man engine company.

not evade the fact that a two-piece engine company must have at least five men on duty at all times to justify the investment in equipment represented by the company and to effectively perform its duties as a fire-fighting unit. No responsible member of a budget-approving body could afford to place himself in the untenable position of disregarding the requirements presented by a budget based on assignment of duties and of approving a fire department budget which could not, for example, permit each two-piece engine company to operate at all times with of at least five man crew.

Written procedures and assignment of duties are essential to any adequate program of instruction and promotion.

YOU will notice in the method described in the chart analyzing the operation on Page 9 that emphasis is placed not on individuals but on the positions these individuals occupy. This approach requires that all men in a company fully understand the responsibilities of each position.

Arrangement of Equipment

HOW should the equipment be arranged to best operate under the suggested method? All engines and "wagons"* should have four pump intakes. There would be the conventional one on each side of a unit, plus one just above the rear step. The fourth intake location should be between the right front fender and the hood over the engine block. (See illustrations below). All these intakes should be capped except the rear one on the engine which would have approximately 12 ft. of soft suction hose connected to it. The free female end of this suction hose should be secured around the rear hand railing usually found about five feet above the intake. The hose may be secured merely by hanging it over the railing. With this arrangement, only one connection need be made at a hydrant. This is the attachment of the suction hose to the hydrant outlet.

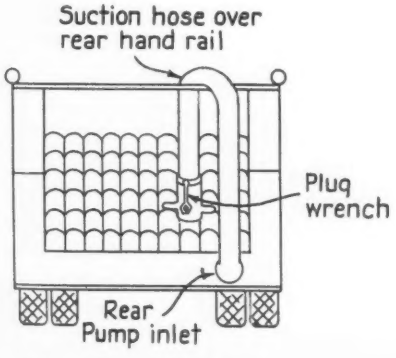
No caps should be allowed on any of the 2½-in. outlets on either the engine or wagon. Such open outlets then do not demand the time formerly required when making a connection because hose can be hooked directly to them in one step without the prior uncapping operation.

The single booster hose reel should be facing frontward and rearward on the apparatus instead of sidewise. (See diagram.) The rearward side (facing the rear step) of the booster reel should be surrounded by a roller bar frame in a "picture-frame" manner. Booster hose would run from the reel straight back to the rear hand railing where a clamp would hold the booster hose nozzle when it was not in use. When the booster line is to be used, one man on the rear step takes the nozzle out of the clamp as the wagon pulls about 20 ft. forward of the fire. Positioning the wagon in this manner beyond the scene of an alarm enables both the booster line and the pre-connected lines to be pulled more easily to the fire.

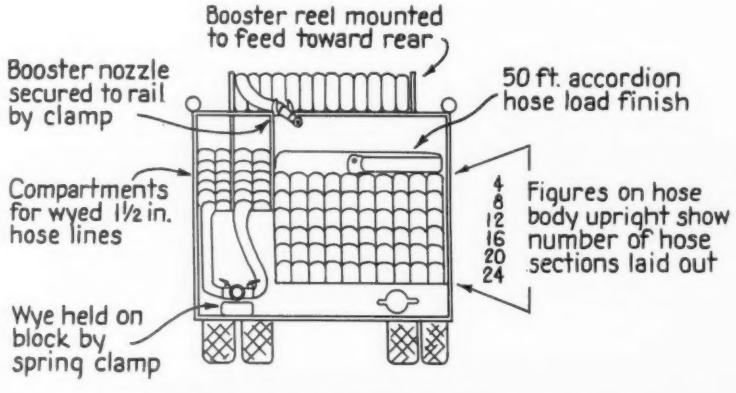
As soon as the unit stops, the hoseman with the booster line in his hand jumps off the rear step and goes with the company commanding officer to the fire. The roller bar frame enables the booster hose to be pulled off the reel with great ease and speed. This method of positioning the booster reel eliminates the conventional steps of the hoseman getting off the rear step and going around to the side of the apparatus where he has to climb up on the unit, stretch his arm away over the top of ladders and other equipment

(*Please turn to page 24*)

*Pumper or booster truck serving as hose tenders in a two piece engine company.



Rear View of Pumper


Booster reel mounted to feed toward rear
Booster nozzle secured to rail by clamp
50 ft. accordion hose load finish
Compartments for wyed 1½ in. hose lines
4 8 12 16 20 24
Figures on hose body upright show number of hose sections laid out
Wye held on block by spring clamp

Rear View of Hose Truck

NFPA Regional Meeting at Providence, R. I.

MANY fire chiefs and fire fighters from departments in Massachusetts, Connecticut and Rhode Island participated in the NFPA Regional Meeting in Providence, Rhode Island, on October 29–30. Altogether 488 NFPA members and guests registered for the two-day meeting at the Sheraton-Biltmore Hotel. Chief Lewis A. Marshall, Co-Chairman of the Sponsoring Committee, and his subordinates of the Providence Fire Department afforded many valuable services to the success of the meeting, to speakers and other NFPA guests. The program for the meeting was outlined in the November, 1953, issue of FIREMEN.

Of particular interest to members of the fire service from New England was a panel discussion on Thursday afternoon covering "Hazards of Oil-Fired Heating and Cooking Equipment." Another panel discussion was devoted to spray nozzles and spray sprinklers.

Other subjects covered included the recent General Motors Fire (see October, 1953, NFPA *Quarterly* preprint, available for 25 cents per copy); non-military problems of national defense, industrial fire protection and other pertinent subjects.

A luncheon on Thursday included talks by NFPA Chief Engineer Horatio Bond and Kyle P. Laughlin, Director, Fire Services Division, Federal Civil Defense Administration. The topic was "Fire Problems of the Atomic Age." To emphasize the importance of the fundamental principles of fire prevention in preparation against atomic attack, a spectacular film entitled "The House in the Middle" was shown. It convincingly illustrated that removing combustible materials, painting, and generally cleaning up home property are positive steps in minimizing fire spread from an atomic blast. The film is available from the Federal Civil Defense Administration.

Another address of significance was by Arthur S. Hopkins, of the Northeast Forest Fire Compact Commission. He explained how the New England States and New York have organized to coordinate the training and mutual aid of forest fire fighters.

George F. Bliven, Chairman, Fire Prevention Committee, Providence Chamber of Commerce, served as Chairman of the Sponsoring Committee which had made excellent preparations for hotel facilities, luncheons and social events necessary to the success of the two-day meeting. (*Photos by Joseph W. Sullivan, Jr., Bureau of Fire Prevention, Providence Fire Department.*)

(Left) Dominating the background of the speaker's platform was a colorful poster showing "Sparky" the firehouse dog who serves as a symbol of the Home Fire Prevention Campaign, sponsored by the NFPA and Advertising Council. At left is Chief Lewis A. Marshall, Providence Fire Department, who delivered a welcoming address. At right is Chief Henry G. Thomas, Hartford, Connecticut Fire Department, and President, International Association of Fire Chiefs, who was also a featured speaker.

During a luncheon for the ladies on Friday, Leo E. Gorman, Chief of the Providence Fire Prevention Bureau, presented this special fire prevention exhibit which dramatically highlighted the dangers of overloading electrical circuits, of using gasoline improperly, of flammable hair spray solutions and other home fire hazards.

***(At right, left to right)* NFPA Chief Engineer Horatio Bond; Providence Fire Chief Lewis A. Marshall; and Henry Parkman; Assistant Director for Non-Military Defense, Office of Defense Mobilization, Washington, D. C., who discussed national defense. (*Photo by Andy Palmer, Woonsocket Call*).**

Correction Notice

IN THE report on state and provincial firemen's training in the November issue of FIREMEN it was stated that information on fire schools and other firemen's training in the state of Ohio could be obtained from Robert M. Reese, Supervisor, Trade and Industrial Education Service, 497 E. Town St., Columbus. Readers interested in obtaining such training information are asked to write to Dr. Harvey Walker, Director, Ohio State Fire School, Political Science Department, Ohio State University, Columbus, Ohio; or to Foss H. Gragg, Chief Fire Prevention Bureau, Division of State Fire Marshal, Columbus 15, Ohio.

1954 FDIC

TENTATIVE dates for the 1954 Fire Department Instructors' Conference have been announced. The Conference is scheduled to be held in Memphis, Tennessee, February 23-26, 1954.

Chief Donald J. Kelley

DONALD J. Kelley, Chief of the Burlington, Vermont, Fire Department, died on October 30 at the age of 49. He had been chief of the Department for the past 11 years and his passing climaxed a career of 29 years of service as a fire fighter.

Chief Kelley's Department has had NFPA Fire Department membership for many years. He was active in the Chittendon County Fire Fighters' Association, the Vermont State, New England, and International Associations of Fire Chiefs, the Vermont State Firemen's Association and other organizations. He made a considerable contribution towards the expansion of the State's firemen's training programs and facilities.

Excellence and Efficiency Keynoted at

Salt Lake City

Part II — By Warren Y. Kimball

Continued from November, 1953, FIREMEN

A SPECIAL feature of the training program is the equipment instruction under Lieutenant Thorstrom. This combines a monthly inspection of all apparatus and equipment in quarters with instruction of members in its use. The program has not only served to improve the efficiency of the companies in the use of equipment but has vastly improved preventive maintenance by on-the-spot correction of minor defects and by spotting needed repairs before major trouble develops.

Here is a typical group training record of a fire company driver training class.

Salt Lake City Fire Department
Group Training Record

Type of Drill: Driver training (classroom and practice).

Classroom — principles of driving, duties of, and knowledge a driver should have. 1 hour classroom, $2\frac{3}{4}$ hours practice.

Station No. 1 — "A" Platoon

Apparatus No. 146

Date October 31, 1952 **Time** $3\frac{3}{4}$ hours

Instructor Lt. Thorstrom

Member	Remarks
Captain	
Lieutenant	Classroom only
Member A	Off duty
Member B	Classroom only
Member C	Classroom and practice. Does well, but could use a little more practice shifting down.
Member D	Classroom and practice. Does exceptionally good job.
Member E	Classroom and practice. Does well, but could use a little more practice shifting down.
Member F	Classroom and practice. Is learning fast, does well for practice he has had. More practice.
Member G	Classroom and practice. Does O.K., but could use more practice shifting down.
Member H	Classroom and practice. Does O.K., but could use a little more practice shifting down.
Member I	Classroom and practice. Has driven heavy trucks before. Does an exceptionally fine job.

Outline of classroom instruction on driver training used by Lieutenant Thorstrom to supplement operational training.

Driver Training
(Classroom Phase)

It is the responsibility of the driver to know and check the following items:

Engine. Type of engine and horsepower.
Permissible RPM under certain conditions.
The difference between high and low speed engine, and why he should know this distinction.
Have ability to recognize foreign sounds in engine, and be able to tell when both ignition systems are in synchronization.
Driver should check — water, oil, fan belts, loose connections, leaks. Watch for signs of water and gasoline in oil. Keep engine clean.
Let engine warm up if started.

Clutch. Driver should know when there is proper pedal clearance.
Know double clutching and reasons for this operation.
Know how and why to depress clutch when starting engine.

Transmission. Shift positions for different gears.
Gear ratios of different positions and relation to engine speeds.
Use and misuse of overdrive.

Lt. A. L. Thorstrom, equipment instructor, with portable electrically driven demonstration pump having pressure and volume stages, gages, glass tubes showing water columns, etc.

Brakes. Type — mechanical or hydraulic and type of booster assistance.
How to tell adequacy of brake pedal.

Proper Use for Stopping.
Fast.
Slow.
On slippery roads.
On turns when necessary and why to avoid if possible.
Down hill using engine in proper gear and how to avoid overheating
Check hand brake for holding on hills and starting on hills.

Steering. Know the steering ratio (turning radius).

Tires. Proper pressure, inspection of tires while washing.

Control of Apparatus
Utah State Laws Governing Emergency Vehicles.
When responding to alarm slow vehicle before going through all major intersections, even when lights and signs are in your favor.
When going through red lights and stop signs, slow to speed not to exceed 25 mph, and slow enough to permit an emergency stop.
Watch speed! 45 mph for trucks; 50 mph for engines, or less, depending on conditions.
When going up hill don't wait until your speed has dropped to shift to lower gear.
When backing into station be sure someone else is watching at back end of apparatus.

Cleaning and Checking Apparatus
Watch for loose or broken parts under as well as on top.

Battery. Check daily and keep fully charged.
Watch ammeter to determine if generator is charging.

Lights. All should be in good condition.

Pump. Care of pump to be taken up on pump instruction.

Driver Training
(Practice)

Start in first gear, shift up to and including overdrive (if provided).
Use two-speed axle.
Use double clutch method for all shifting.
Shift to lower gears on up grades.
Shift to lower gears on down grades.
Check for proper braking:
Down hill using engine and brakes.
Demonstrate braking on slippery roads.
Back apparatus into station.
(Watch driver for alertness and reactions.)

SALT LAKE FIRE DEPARTMENT
Personnel and Efficiency Rating

NAME _____ DATE _____ AVERAGE RATING _____

AGE _____ POSITION _____ YEARS SERVICE _____

LOYALTY	Faithful Defends Department	Accepts Criticism	65 70 75 80 85 90 95 100	
MORAL CHARACTER	Habits	Honesty Sobriety	Morally Clean Morally Courageous	65 70 75 80 85 90 95 100
PERSONAL APPEARANCE	Neat Clean	Personal Habits Pride		65 70 75 80 85 90 95 100
SELF IMPROVEMENT	Ambitious Initiative	Studious Industrious	Aggressive	65 70 75 80 85 90 95 100
ATTITUDE TOWARD JOB	Cooperative Enthusiastic	Interested Progressive		65 70 75 80 85 90 95 100
WORKING HABITS	Efficient Thorough	Systematic Energetic	Careful	65 70 75 80 85 90 95 100
WILLINGNESS TO ACCEPT RESPONSIBILITY	Enterprising Accepts Responsibility	Constructive Ideas		65 70 75 80 85 90 95 100
ABILITY (SKILL)	Skillful Resourceful	Efficient Talented	Adaptable	65 70 75 80 85 90 95 100
LEADERSHIP (ABILITY TO LEAD OTHERS)	Inspires Confidence Self-reliant	Shows Initiative		65 70 75 80 85 90 95 100
JUDGMENT	Sound Independent Thinker	Sensible	Cool-headed	65 70 75 80 85 90 95 100
DEPENDABILITY	Capable Reliable			65 70 75 80 85 90 95 100
KNOWLEDGE OF WORK	Thorough Complete			65 70 75 80 85 90 95 100
ABILITY TO APPRAISE SITUATION	Decisive Resourceful	Prompt		65 70 75 80 85 90 95 100
PERFORMANCE OF DUTIES	Fair Excellent	Good		65 70 75 80 85 90 95 100

Assistant Chief _____ Assistant Chief _____
Assistant Chief _____ Assistant Chief _____
Battalion Chief _____ Battalion Chief _____
Battalion Chief _____ Battalion Chief _____

REMARKS: _____

Chief of Fire Department

Here is the rating sheet used by the Board of Chief Officers in determining efficiency ratings of members of the department. Markings are defined as follows: 65-70 unsatisfactory, 70-75 poor, 75-80 satisfactory, 80-85 average, 85-90 very satisfactory, 90-95 excellent, 95-100 exceptional.

Here is one of five auxiliary rigs operated by the department to relieve heavy duty apparatus on minor fires. In addition to booster tank, pump and reel, it carries backpack extinguishers, 1½-in. and 2½-in. hose (the latter used for hydrant supply) and foam liquid. Each of these radio-equipped units are manned by a detail from the station to which it is assigned.

A great deal of attention is given to salvage equipment and techniques, and salvage possibilities and problems are noted by fire company inspectors. Where large areas must be covered, covers are roped or bolted together with 12-in. overlap and water is gathered by a canvas "water damage reducer" which gathers the water into a hose connection which permits it to be channeled outside.

Monthly Inspection Training Report

Station No. 2 — "A" Platoon **Date** Nov. 10, 1952
Apparatus Engine No. 121 **Time**.... AM PM **to**.... AM PM

Officer Lieutenant **Driver** .....

Condition of Apparatus and Repairs Effected and Recommended:

1. Fan belts are in bad condition. Replaced.
2. Check distributor points for spacing. Checked.
3. Check spark plugs for spacing. Checked.
4. Carburetor needs to be cleaned and adjusted. Referred to shop.
5. Globe out in tachometer. Globe replaced.
6. Left door needs new dovetail. Referred to shop.
7. Right door needs inside handle. Replaced.
8. Both doors need new check straps. Referred to shop.
9. Seat cushions need to be repaired. Referred to shop.
10. Clutch needs to be adjusted. Adjusted.
11. Badly in need of new discharge gates. Referred to shop.
12. Move priming oil pump near control panel and make larger reservoir if possible. Referred to shop.
13. U joints on priming pump drive shaft are in bad condition. Referred to shop.
14. Brake fluid very low. Refilled.
15. Fluid line at rear of master cylinder leaking. Fitting tightened.
16. Priming pump needs to be rebuilt, bushings are worn badly. Referred to shop.
17. Flexible hydraulic line to rear wheels leaking badly. Replaced.
18. Left torque rod rear ball socket needs to be adjusted. Referred to shop.
19. Right rear torque ball needs to be tightened in mounting bracket. Referred to shop.
20. Rear tires quite low. Referred to station officer.
21. Need truck tire pressure gauge. Referred to shop.

Condition of Equipment and Repairs Effected and Recommended:

1. Another spotlight needed on rear. Referred to shop.
2. Bolt missing in heel of roof ladder. Referred to station officer.
3. Guide track loose on baby extension. Also needs guard to protect it from chafing in hanger. Referred to shop.

(Signed) A. Leonard Thorstrom, Lt.
Equipment Instructor

Monthly Inspection Training Report

Station No. 2 **Date** Feb. 4, 1953
Apparatus 121 **Time**.... AM PM **to**.... AM PM

Officer Lieutenant **Driver** .....

Condition of Apparatus and Repairs Effected and Recommended:

1. Radiator tie rod is broken on right side.
2. No governor.
3. Hose bed needs partition for 3-in. hose or a carrier for 2 lengths of 2½-in. hose installed on right front fender.
4. Separate switch needed for clearance lights, so they can be on without the red lights.
5. Gear oil in road and pump transmission should be changed.

Condition of Equipment and Repairs Effected and Recommended:

1. Baby extension ladder should be repaired, the guide tracks are loose.
2. Masks were checked. One Scott air pak had screws out of regulator mounting bracket.

(Signed) A. Leonard Thorstrom, Lt.
Equipment Instructor

(Left)
Part of the duties of the equipment instructor is to make a careful monthly check of the condition of all apparatus and equipment in the quarters he visits. This check includes visual inspection of apparatus chassis, body, equipment, and a check of the engine compression. (Pump efficiency has been found to have been seriously affected by improper timing.) Lubrication is scheduled on a time basis but oil is changed every 150 engine hours. This program has resulted in the correction of many minor conditions before major repairs are needed. To show the results of such inspections we present two reports covering Engine 121 made 3 months apart. In the first inspection of this apparatus 21 items needed attention, and in the second inspection only 5 items were noted. While in theory the company officers and apparatus drivers might note such conditions, an equipment inspector is better able to secure corrections. Incidentally, the maintenance chief reports to Assistant Chief White in charge of training.

Fire Prevention

SALT LAKE CITY pioneered in fire prevention inspections. Chief James Devine, who had been an architect and builder, gave a paper on "The Value of Inspection Work for the Fire Department" at the convention of the International Association of Fire Engineers (now Chiefs) held in Salt Lake City in 1896. On March 5, 1897, the first inspection was conducted by Captain W. H. Bywater, later chief and a president of IAFC. Inspections were recorded in a book still kept in the chief's office in which Chief Devine instructed officers to record the following information which is still considered pertinent to fire department inspections:

1. Name and location of building.
2. Description inside and outside and use of same.
3. What fire protection has it inside?
4. Entrance and exits.
5. Contents.
6. Fire escapes and standpipes.
7. If accessible at rear, state how.
8. Location of hydrants for front and rear.
9. Does areaway extend under sidewalk?
10. If so, is it safe for aerial truck?
11. Describe arrangement of basement.
12. Is building connected with other buildings?

Note any violation of fire ordinances or such information as may be of benefit to the department.

The present Division of Inspection and Fire Prevention was organized in 1941 and includes the Fire Prevention Bureau, Records Bureau, Arson Investigation Office and Public Relations Office. It is headed by Assistant Chief W. J. Smith, who is assisted full-time by two officers and two firemen plus the part-time assistance of men detailed to the Bureau for special inspection work.

The Fire Prevention Bureau inspections are supplemented by building inspections made by the Combat Division directed by the combat assistant chiefs of each platoon. With the exception of large buildings to which individual fireman-inspectors are assigned, most familiarization inspections are conducted by fire companies "on-the-air." Two companies from different parts of the city are on inspection tour each morning but are available for fire calls. Last year the Bureau made 6805 inspections and the Combat Division made 13,286 inspections.

Rural Fire Department Inspections

A training outline based upon a lecture given at the 25th Annual Michigan Fire College at Ann Arbor by Warren Y. Kimball, Manager, NFPA Fire Services Department.

Introduction

FARM fire losses in the United States totalled $133,000,000 in 1952 according to estimates prepared by the United States Department of Agriculture. This figure approximates one-seventh of the national fire loss and has led numerous fire departments serving rural areas to study the feasibility of extending fire prevention and inspection techniques to rural areas. It is recognized in most instances that the rural properties are outside of municipal territories where fire prevention ordinances ordinarily apply but rural fire prevention programs have proven to be desirable. When properly handled, inspections are welcomed by rural residents and are of benefit to the fire departments.

Perhaps the outstanding farm inspection program by fire departments has been that initiated by the Ohio Rural Fire Committee and reported by L. E. Shingledecker in FIREMEN for June, 1952. Fire chiefs who participated in the Ohio farm inspection program were enthusiastic over the results and the program is now being carried out under the direction of Ohio State Fire Marshal Charles Scott. Modern farms are in essence industrial occupancies devoted to the production of food and other agricultural products and large fire losses must be expected unless effective fire prevention techniques are employed. Fire prevention techniques effective on farms are also applicable where rural industries such as cheese factories, woodworking plants and elevators are located in rural communities.

I. Purpose of Farm Inspections

(What do we expect to accomplish?)

1.1 Knowledge of Property to Facilitate Fire Fighting and Rescue

1.2 Prevention of Fire by Removal of Common Hazards

1.3 Development of Support for the Fire Department

II. Preparations to be Made by the Fire Company

(Stress that the theme of inspections is seeking the cooperation of rural residents and property owners through mutual interest. It is not an enforcement program.)

2.1 Organize Committees
- 2.11 Organization of inspection squads or teams
- 2.12 Plans and records
- 2.13 Publicity

2.2 Seek Support of Cooperating Agencies
- 2.21 Insurance fieldmen (stock and mutual)
- 2.22 Representatives of utility companies
- 2.23 Public officials, including state fire marshal
- 2.24 Press, radio, TV
- 2.25 Other friendly organizations, including churches, soil conservation agencies, agricultural agents, agricultural colleges. (*Note*: In several states, agricultural colleges include fire prevention in their curriculums.)

2.3 Decide What, in General, to Look For

(Look for the hazards obvious to firemen but likely to be overlooked by occupants.)
- 2.31 Life Hazards
- 2.32 Fire hazards
  - 2.321 Hazards common to most occupancies
  - 2.322 Special farm fire hazards (such as open flame crop driers, brooder lamps near combustibles, etc.
- 2.33 Accessibility of property for fire fighting and route from fire station
- 2.34 Availability of water supplies
  - 2.341 Suction sources
  - 2.342 Distance to principal buildings
  - 2.343 Amount of water

2.4 Set Time for Campaign
- 2.41 Select a season convenient to rural residents and farmers
- 2.42 Choose and publicize dates that will be convenient (*Note*: With adequate publicity farmers will be home and will be expecting you.)

2.5 Plan to Record Essential Data about Each Farm
- 2.51 Decide on what data to record such as:
  - 2.511 Name of owner
  - 2.512 Name of occupant
  - 2.513 Location of property
  - 2.514 Phone number
  - 2.515 Route to take
  - 2.516 Life hazards
  - 2.517 Map or diagram of farm
- 2.52 Choose record forms (3 x 5 in. or 4 x 6 in. cards)
- 2.53 Plan to make duplicate records so that a set can be carried on rural truck. Some use 8½ x 11 notebook with data protected by plastic sheets so it can be read in rain or snow
- 2.54 Prepare to record essential data on master map in station
  - 2.541 Choose type of map such as official state highway map, topographical map, etc.
  - 2.542 Decide on a grid or radial system for designating farm locations
  - 2.543 Decide on a farm numbering or identification system. (Some use utility pole numbers or post a fire number.)

III. Inspection Procedures

3.1 Get-together at Station Prior to Inspection
- 3.11 Consider a "kick-off" dinner with appropriate publicity
- 3.12 Check assignment of squads or teams
- 3.13 Wear uniform cap or identification badge

3.2 Approach Farm and Note General Surroundings

3.3 Make Introduction to Farmer
- 3.31 State purpose of inspection and name of organization you represent
- 3.32 Get his or her help in identifying farm for your records.
- 3.33 Ask occupant to accompany you on inspection.

3.4 Make General Size-up from Fire Fighting Point of View
- 3.41 Size and location of buildings
- 3.42 Access roads and condition (Is property accessible to fire apparatus?)
- 3.43 General construction and type of farm occupancy
  - 3.431 Dairy
  - 3.432 Poultry
  - 3.433 Truck gardening, etc.

  (See NFPA Standard No. 223, "Fire Protective Construction on the Farm")

3.44 Your overall impression as to housekeeping and condition of property from fire hazard point of view

3.5 Life Hazard

3.51 Human
- 3.511 How many occupants?
- 3.512 Where do they sleep?
- 3.513 How can they get out in case of fire?
- 3.514 Is their exit blocked by oil stoves, etc.?

3.52 Livestock
- 3.521 Where located?
- 3.522 How to release (see NFPA FIREMEN, September, 1947)
- 3.523 Brooders and hatcheries

3.6 Water Supply

3.61 Stock ponds
- 3.611 Secure cooperation of owner or soil conservation service in making ponds accessible for fire fighting
- 3.612 Determine whether ponds are a convenient suction source for pumpers or portable pumps
- 3.613 Estimate hose needed to utilize supply

3.62 Cisterns
- 3.621 Location
- 3.622 Capacity

3.63 Farm's pumps
- 3.631 Location
- 3.632 Capacity
- 3.633 First-aid hose available
- 3.634 Location and type of hose outlets
- 3.635 Are fire department adapters needed?
- 3.636 Power source (Is it reliable and safe from fire?)

3.64 Other static water supplies
- 3.641 Streams
- 3.642 Natural ponds, lakes
- 3.643 Well points with fire department threads
- 3.644 Open wells (note height of lift)

3.65 Fire department equipment needed
- 3.651 Small diameter suction hose
- 3.652 Suction boosters
- 3.653 Deep well jets primed from booster tank

3.66 Determine flows
- 3.661 Arrange future fire department drill sessions at farms having differing water supply problems

3.67 Winter conditions
- 3.671 Mark supply locations with colored stakes or painted directional signs.
- 3.672 Instruct farm owners how to make a suction box (See FIREMEN December, 1949, page 11.)

3.7 Private Fire Protection Equipment

3.71 Hose
- 3.711 Size
- 3.712 Location
- 3.713 Amount
- 3.714 Condition

3.72 Ladders
- 3.721 Length
- 3.722 Condition

3.73 Extinguishers
- 3.731 Are types provided U.L. approved and suitable for class of fire?
- 3.732 Location
- 3.733 Protected against freezing where required?

IV. Some Fire Hazards to Look For

4.1 Electricity

(References: Volume V, National Fire Codes, 1953, $3.00; Handbook of Farmstead Wiring Design, 40 cents, Industry Committee on Interior Wiring Design, 420 Lexington Ave., New York, N. Y.; Wiring Simplified, Richter)

4.11 Note which buildings are wired
4.12 Inquire who installed wiring (occupant or electrician)
4.13 Locate service entrance
4.14 Note utility pole and number
4.15 Look at overload protection
- 4.151 Type and capacity of fusing
- 4.152 Consult electricians and power company representatives

4.16 Note locations where there may be a shock hazard
- 4.161 Wet locations
- 4.162 Do electric fences have U.L. listed controllers?

4.17 Are brooder lamps too near combustible litter?
4.18 Are dustproof fixtures provided where needed?
4.19 Note danger of mechanical injury to electrical equipment causing fires

4.2 TV Antennas (See NFPA pamphlet, Television Antennas, 25 cents)

4.21 How secured? (Should be kept off chimneys because wind vibration will crack or break chimney)
4.22 Consider danger of antenna falling on live wires.
4.23 How grounded. Are lighting arresters properly installed?

4.3 Lightning Rods

4.31 Observe grounds and if in doubt, suggest resistance check
4.32 Look for Underwriters' Laboratories master label.
4.33 Note soil conditions near grounds
4.34 Observe condition of points

4.4 Flammable Liquids (Consult NFPA Standard No. 395, Farm Storage of Flammable Liquids)

4.41 Storage: What kinds and amounts of flammable liquids are stored? Is storage at least 40 feet from buildings?
4.42 Where are motor vehicles stored? Do they endanger important buildings?
4.43 Note location of oil burning appliances (lamps, stoves, etc.)

4.5 Liquefied Petroleum Gas (See NFPA Standard No. 58)

4.51 Note location and type of appliances
4.52 Observe fuel storage (amount and location). Are storage containers on a solid base and away from windows or openings to basement?
(Caution occupants not to extinguish an LP gas fire until gas can be shut off to prevent explosion.)
4.53 Note uses of gas as a truck or tractor fuel. Inquire whether refueling is done at a safe location

4.6 Chimneys

4.61 Note type of construction
4.62 Is mortar in good condition above and below roof?
4.63 Is chimney on solid masonry foundation?
4.64 Is flue lined?
4.65 Fireplaces?

4.7 Dehydrators and Driers (See NFPA Standard No. 93-T)

4.71 Notice evidence of overloading and overheating (overheating can damage crops even if fire does not result)
4.72 Observe hay storage, whether baled or loose. How is hay dried?
4.73 Advise occupants to call fire department if heating of hay is suspected (see FIREMEN for August, 1953)

4.8 Roofing

4.81 Is roofing of fire retardant material?
4.82 Are spark arresters provided for chimneys where roofs are wood?

4.9 General Housekeeping ("A broom is the best fire extinguisher")

4.91 Housekeeping is considered one of the best indexes of fire safety

V. Conclusion of Inspection

5.1 Things To Do at Farm

5.11 Thank farmer. Compliment him for good features and suggest correction of serious hazards
5.12 Post fire department number at his telephone
5.13 Offer to post "No Smoking" signs in barns and other hazardous locations.

5.2 Consolidation of Data at Fire Station

5.21 Hold post-mortem conference at fire station
5.22 Prepare records and reports
5.33 List hazards found and corrected
5.24 Give farmers additional information requested
5.25 Make your report to the public (via press, radio, and TV)

(Continued on next page)

Rural Fire Department Inspections

(*Continued from previous page*)

VI. FOLLOW-UP

6.1 Keep Your Inspection Records Up To Date

6.2 Hold Fire Company drills at Important Farms

6.3 Organize Farm Squads to Assist at Rural Fires

6.31 To police farm lanes for movement of apparatus

6.32 To provide additional water (stock tanks, etc.)

6.33 To give farm fire squads basic training in first aid fire fighting

6.4 Refer Special Hazards to Cooperating Agencies (Use tact because this is a voluntary inspection, not a police action. However, a utility might like to know if its facilities are involved in a dangerous condition. Suggest improvements or suggest that appropriate authorities check your appraisal of a hazard and advise)

6.5 Plan Rural Fire Fighting Sequence for Local Use Based upon Results of Inspection (See Fighting Rural Fires, NFPA No. F-20-2, reprinted from May, 1953, FIREMEN)

6.6 Conduct a Year-round Publicity Program (Stress seasonal fire hazards. Consult NFPA Public Relations Department. Use publicity material available from the Advertising Council, 25 W. 45th St., New York, N. Y.)

Chemistry Building Fire at State University of Iowa

BECAUSE it prevented effective application of hose streams, a false ceiling of wood lath, wire and plaster proved an important factor in the estimated $383,000 fire loss which occurred in this building on October 7. State University of Iowa, in Iowa City, (not the Iowa State College in Ames), housed laboratories, class rooms and a supply room in the east wing. The 5-story structure was 225 ft. long, 54 ft. wide and about 50 ft. high, with brick walls, reinforced concrete floors, but with a wood-framed roof and the false ceiling.

During an experiment in the laboratory on the fifth floor a bottle of ether was dropped and the vapor was ignited by an open flame. In the next few moments three of the laboratory personnel were burned while others attempted to control the flames with hand extinguishers. According to reports the laboratory fire was controlled to some extent but ventilating fans allowed flames and heat to move upwards through exhaust ducts to the false ceiling area. One of the laboratory personnel then noted that an exhaust duct was reddening from heat in the upper area. It was then

(*Left*) Inadequate water supply prevented proper application of ladder pipe streams when fire broke through the roof of the laboratory building. (*Right*) There were few openings in the false ceiling so fire fighters directed streams up through ventilator ducts in hopes of providing some cooling for the involved area.

that a telephone alarm was sent for fire department aid.

The Iowa City Fire Department, headed by Chief Al Dolezal, responded together with fire companies from the Hills, West Bucas, and Coralville Fire Departments. Six engines and two ladder trucks were included in the response, and off-shift personnel, University students and other volunteers assisted in the fire fighting.

However, according to the report of Chief Dolezal, the amount of equipment and of trained fire fighters was not enough to cope with the fire conditions. With pumpers operating from five hydrants in the vicinity there was not enough water left to provide adequate streams from ladder pipes when fire burst through the roof. The false ceiling resisted efforts of fire fighters to "open up" so that nozzles could be inserted for attack on the most heavily involved areas. Eventually nine 2½-in. lines and 4 booster lines were directed on top of the roof. Considerable water damage resulted within the building when the roof collapsed a half-hour after fire fighters arrived. Although salvage covers were in use to protect books and other materials a large quantity of research papers and other laboratory records were destroyed. Students and employees of the University cooperated in clearing the water from the building.

As shown in the illustration below the entire wood roof structure was eventually destroyed by the fire. The fire was stopped at the northern wing of the building which had a concrete roof. In addition to the burned laboratory personnel, three fire fighters suffered injury. (*Photos by Iowa City Press-Citizen.*)

View of roof area of southeast wing after the fire. Heavy wood framing and tar covering became completely involved when fire fighters could not direct streams into the false ceiling area where the fire burned intensely.

Getting That "Much-Needed Lift"

Based on Equipment Development Report No. 20, Forest Service, U. S. Department of Agriculture. Copies of this report may be obtained by writing to the Arcadia Development Center, U. S. Forest Service, Arcadia, California

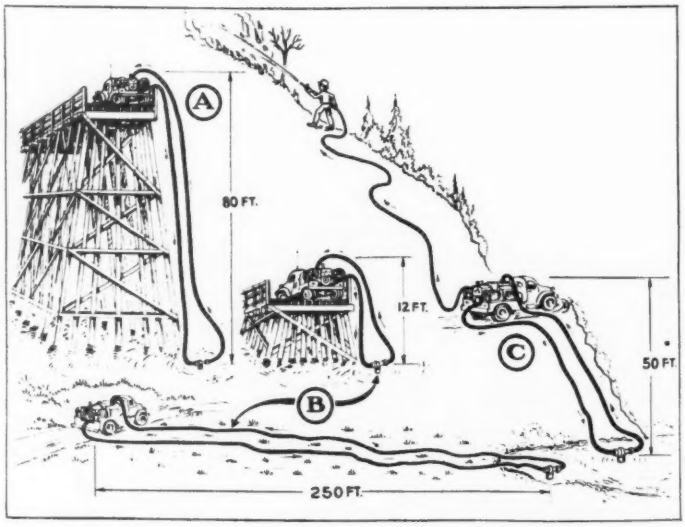
What's in a name? For many years at least three different names have been used to describe one simple, but important, piece of fire equipment, "Ejector," "eductor," and "suction booster" all refer to the unit described on these two pages.

Perhaps another name, "injector," would be more definitive, since in using this equipment water is injected into its pressure inlet and when passing through the venturi at higher velocity, "educts" additional water through the suction opening, and "ejects" it as supply for fire fighting.

Whatever the name, these pages provide some useful information which fire departments may apply practically when location of water sources necessitates drafting for "high lifts." — Ed.

FOR many years industry has relied upon ejectors as a means of raising water from sources normally inaccessible to standard pumps. To investigate the application of this type of drafting for fire fighting service a project was proposed and assigned to the Arcadia Equipment Development Center of the United States Forest Service in Arcadia, California. During the project a number of makes and models of ejectors were tested for performance and other forest service requirements.

Ejectors, which serve as "suction boosters," are simple, inexpensive devices with no moving parts. Water is pumped into the ejector inlet and then passes through the jet in a high velocity stream. The force of this stream passing through the aperture is sufficient to exert a strong suction on the suction sleeve of the unit. Diagrams on this page illustrate this procedure in both the straight type and "U" type of ejectors.



Basic evolutions for using ejectors. (A) High lift using approximately full pump capacity for tank filling. (B) Low lift using pump capacity for tank filling. (C) Using half the pumper output for operating the ejector to keep the tank full while remainder of pump capacity is utilized for fire streams.

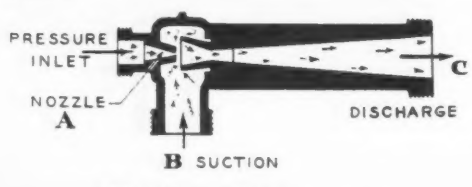
How to Use Ejectors

WHEN a pump drafts water, air is removed under atmospheric pressure from the inside of the suction hose thus creating a vacuum. Since atmospheric pressure at sea level is 14.7 psi on the surface of the supply reservoir, water is then forced into the suction hose where the vacuum is created. If pumps could create perfect vacuums, water could be lifted to 33.9 ft. in height, or 2.3 ft. for every pound of pressure. However, due to mechanical limitations, and friction loss in suction hose, good fire pumps are only expected to lift water approximately 20 ft. and still maintain suction.

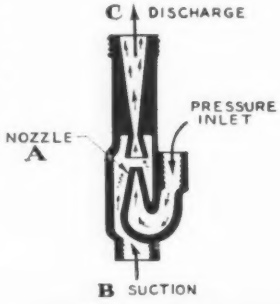
For lifts above 20 ft. the use of ejectors is recommended. In fact, the use of these devices may often eliminate suction difficulties which often result in ruined pumps. Loose suction hose couplings, leaky gaskets poor pump packing, or other means of air leak seriously affect the ability of pumps to lift water.

Ejectors employ pressure for picking up water from the supply source and lifting it to the fire truck or another water container. It is a simple matter to connect a length of small hose from a discharge gate of a pumper to supply the ejector. Another length of larger hose may be returned from the discharge side of the ejector to the suction side of the pump. In this manner pump pressure may be added to atmospheric pressure in forcing water to the desired height.

Below and at right are two basic types of ejectors. Water is pumped to the pressure inlet and issues from nozzle "A" in a high velocity stream. The force of this stream allows additional water to be picked up from suction inlet "B." The combined flow is delivered through the discharge "C" under pressure.



STRAIGHT TYPE



"U" TYPE

EXPERIMENTS at the Arcadia Equipment Development Center show that there are three basic conditions where ejectors may be used successfully. They are:

(1) High lift using approximately full pump capacity for tank filling.

(2) Low lift using approximately full pump capacity and returning the maximum amount of water for rapid tank filling.

(3) Using one-half the pumper

(*Please turn to page 28*)

San Diego Utilizes "Eductors"

By Battalion Chief Robert Ely, San Diego, California, Fire Department

Photos by San Diego Fire Department

IN THE San Diego Fire Department eductors (or ejectors) were developed primarily for pumping water from boats or basements. However, under the direction of G. E. Courser, San Diego Fire Chief, recent tests with an eductor jet indicate that the eductor can also serve a useful purpose in drafting water for fire fighting.

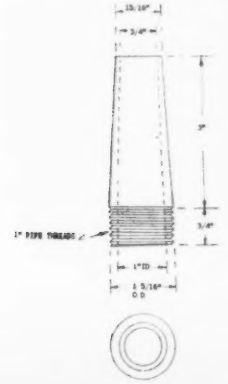
All tests were conducted from the standard 10-ft. lift at San Diego's pumper test pit. A length of 3-in. cotton, double-jacketed, rubber-lined fire hose was connected from the discharge side of the eductor to the suction side of the pump, and 2½-in. hose was connected from one pump outlet valve to the jet side of the eductor. Another 2½-in. hose was also attached to a pump discharge valve and supplied a test nozzle.

A definite pumping evolution was established in order to properly utilize the drafting capacity of the eductor. First, the water tank cap was removed, then a hose clamp was placed on the 3-in. hose near the suction side of the pump. (A gate valve can be used between the 3-in. hose and the suction inlet.) The valve from the water tank to the pump was opened wide; the pump was placed in gear, and the throttle opened to pump 100 lbs. pressure. The pump discharge valve was then opened to supply the hose connected to the intake of the eductor, then pump pressure was raised to 150 lbs.

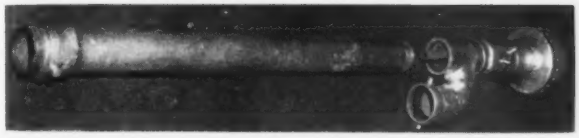
As soon as the 3-in. hose from the eductor to the pump filled with water, the hose clamp was slowly opened. Pump pressure varied for a few moments until the air in the hose was cleared. Then the valve from the water tank to the pump was left open and water coming in the suction side from the eductor filled the tank to overflowing within 1 minute and 10 seconds. At this point the valve was closed after which the pump discharge valve and the hose connected to the tank nozzle was opened slowly. Pressure was increased to gain the most possible gpm at the test nozzle.

In the first test 50 ft. of 3-in. hose was used to connect the eductor to the suction side of the pump while 2½-in. hose was connected from a pump discharge valve to the jet of the eductor. While pumping at 150 lbs. a Pitot gage showed that a total of 168 gpm was available at the test nozzle. When the pump pressure was raised to 200 lbs., 215 gpm was produced at the nozzle.

In the second test 100 ft. of 3-in. hose connected the eductor to the suction side of the pump. When 202 lbs. pump pressure was developed, 201 gpm was available at the test nozzle.



(Left) Diagram of San Diego eductor jet. Inside diameter tapers from 1-in. to ¾-in. Outside diameter tapers from 1 5/16 in. to 1 5/16 in. Using this eductor with the pumper located 100 ft. from water supply the Department supplied a 1-in. tip at 46 pounds NP (nozzle pressure), and a ⅞-in. tip at 80 pounds NP. With the pump operating at 200 pounds pressure the ⅞-in. tip could be supplied with 80 pounds NP 1100 ft. from the pumper. This length of hose gives sufficient friction loss so that the pump discharge valve could be opened fully. If shorter supply lines are used care must be taken to "choke" the pump discharge to obtain maximum operating efficiency of the eductor.



Here is the eductor with the discharge pipe removed. Note the machined jet above pipe elbow at right. The jet is screwed into a 1-in. pipe elbow which is welded in place.

Here is the eductor used in the tests by the San Diego Fire Department. Desirable length of hose is of 3-in. size and isconnected to the discharge side of the eductor. Lower 2½-in. hose is connected to the jet side of the eductor. Note the strainer on the suction side.

Eductor with suction strainer removed and a vacuum gauge connected to test efficiency of the jet.

Under normal conditions when the eductors are used for pumping water from boats or basements, a 4½-in. hard suction hose is used as a discharge hose and 100 ft. of 2½-in. hose are connected from the pump discharge valve to the eductor. 120 lbs. pump pressure is developed. These eductors will lift and discharge 300 gpm from a 10-ft. suction lift, in addition to water that is pumped through the eductor jet.

Test operations at the San Diego Fire Department test pit in the foreground nozzle discharges into a collector. Drafting is from a 10-ft. lift where two lines of hose are shown at center right.

BETTER PROTECTION AT LOWER COST THROUGH COMBINATIONS OF ADT *Automatic* PROTECTION SERVICES

BURGLAR ALARM SERVICE for PREMISES, SAFES and VAULTS
BURGLARY, HOLDUP and INTRUSION
INTRUSION DETECTION and ALARM SERVICE
HOLDUP ALARM SERVICE
SPRINKLER SUPERVISORY and WATERFLOW ALARM SERVICE
AUTOMATIC FIRE DETECTION and ALARM SERVICE
FIRE
AUTOMATIC HEATING and INDUSTRIAL PROCESS SUPERVISION
SPECIAL HAZARDS
AUTOMATIC SMOKE DETECTION and ALARM SERVICE

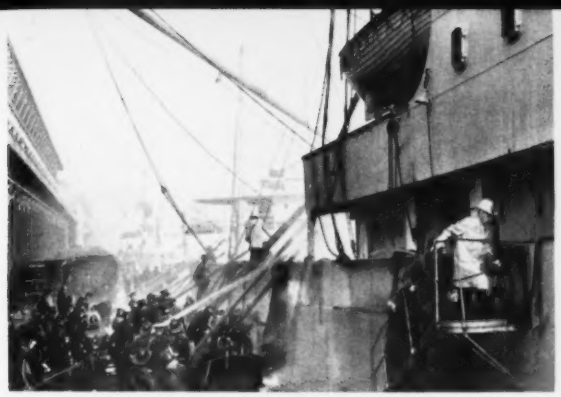
Progressive business organizations from coast to coast are improving their protection and saving money through combinations of ADT Automatic Protection Services, which make it possible to discard old-fashioned and more costly protection methods.

ADT Automatic Protection Services eliminate dependence on the fallible human element by safeguarding property and profits with systems which stand guard 24 hours a day, every day in the year, to detect and report trouble conditions *automatically*.

An ADT representative will be glad to survey your premises and to show you how these services can be applied. Telephone the nearest ADT Central Station or write to our New York Executive Offices.

ADT

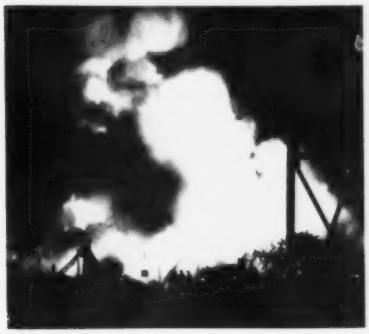
Controlled Companies of
AMERICAN DISTRICT TELEGRAPH COMPANY
155 Sixth Avenue, New York 13, N. Y.
CENTRAL STATIONS IN PRINCIPAL CITIES



Multiple Alarm Responses in Boston

Boston, Massachusetts (*Left*), **November 2.** (*United Press Photo.*) A drum of sodium peroxide was broken and the contents contacted moisture, then ignited. Fire spread to other drums of the cargo of this Norwegian freighter *Black Falcon*. Seven longshoremen were killed and at least 13 others injured. Boston fire fighters encountered rescue conditions which paralleled those of the *Leyte* disaster of October 16. (See November NFPA *Fire News*.) (*Right*) Another multiple alarm response resulted when the Dover St. bridge was involved by fire which originated in the under surface of the deck. Collapse of the bridge put 150 fire alarm boxes out of order for about five hours. Several thousand phones were out of service throughout the day. Fire fighting was interrupted when a locomotive cut four hose lines and rammed the bridge wreckage. **October 22.** (*AP Wirephoto.*)

Fires in the News



Edgewater, New Jersey, October 4. (*Wide World Photo.*) An estimated $400,000 loss occurred in this unsprinklered occupancy used for the storage and refining of fish oils. Watchman stated that an explosion started the fire which he tried to control with a foam generator before calling the fire department. Mutual aid response to alarms brought 14 engine companies, a ladder company, 3 rescue squads and 6 other company units.

Louisville, Kentucky, October 20. (*Photo by Courier-Journal and Louisville Times.*) Fire originated in refuse and dust near a paper cutting machine, spread through dust covered wooden joists and trusses, then throughout undivided and unsprinklered 48,000 sq. ft. 1-story building. Loss estimated at $1,070,000.

Philadelphia, Pennsylvania, October 21. (*Phila. Fire Dept. Photo.*) An unattended electric iron ignited a telephone directory used to support the iron and fire started on the third floor of this unsprinklered 3-story stone, wood-joisted building used as a home for aged women. Occupants used soda acid extinguishers with little effect before calling the fire department, but 200 women were rescued safely. Responding fire fighters confined fire to third story and attic.

(*Right*) **Monterey, California, October 24.** (*Photo by Rey Ruppel.*) Seventy seconds after an automatic rate-of-rise fire detection system had transmitted an alarm an officer in the first responding fire company saw smoke and flames breaking through the roof of this 2-story wood frame fish processing plant. Despite mutual aid response of 6 fire departments the 12,600 sq. ft. 2-story wood frame structure became heavily involved. Unprotected vertical openings and lack of fire doors aided flame spread. Loss was estimated at more than $175,000.

(*Left*)
Oakland, California, October 16. (*Wide World Photo.*) Damage in excess of $500,000 was estimated when fire destroyed three buildings, one of which was used for storage of supplies for the U. S. Army. During the 5-alarm response more than 200 fire fighters responded. A fire boat, Coast Guard and auxiliary craft were utilized for protecting exposures in the waterfront area.

Sail into Action with

INDIAN FIRE PUMPS

It's "full speed ahead" in your fire fighting efforts when you have plenty of these famous, back-pack extinguishers. No upkeep cost. No chemicals to buy. Strongly built of best materials, INDIAN FIRE PUMPS give years of service.

The Rhode Island Forest Service Fire Trucks are well equipped with INDIAN Fire Pumps. George W. Smith of Wakefield, writes:

"Gentlemen: I use INDIAN FIRE PUMPS, 40 in two companies, 5 in one company. I have put out 500 feet of grass fire with one tank of water and 300 feet of brush fire with one tank of water. After forty years of fire fighting I feel that I can pass fair judgement and I cannot give INDIAN FIRE PUMPS too much praise for I have seen them save thousands of dollars in fire loss.

Send for Catalog

Now available with 4 or 5 gal. tank as desired.

All seams electric welded — no leakage.

D. B. SMITH & CO. 408 MAIN ST UTICA 2, N. Y.

PACIFIC COAST BRANCHES

Hercules Equipment & Rubber Company, Inc 435 Brannan Street San Francisco 7, California

Fred E Barnett Company 2005 S E 8th Ave Portland, Oregon

Mill & Mine Supply Co 2700 Fourth Avenue South Seattle, Washington

Roy G Davis Company 617 East Third Street Los Angeles, California

Fred E Barnett Company 600 Spring Street Klamath Falls, Oregon

L N Curtis & Sons 424 W Third Street South Salt Lake City, Utah

CANADIAN AGENTS

Flack Brothers, Limited 110 Alexander Street Vancouver B C, Canada

C E Hickey & Sons Ltd Hamilton, Canada

Pumpers Are More Than Hose Carriers

The article following is reprinted from the "Kentucky Fire News" for September, published by the Kentucky Fire Safety Commission. We venture the opinion that the only true reason why pumpers are not used is because fire departments are not properly trained in their use.

The pumper is a device that is intended to convert a domestic or other water supply into the proper effective fire streams. In many cases the use of a direct hydrant stream for anything more than a "watch" or standby line may be taken as evidence of an indifferent, inadequately trained fire department. If a department does not know how to use its pumpers effectively, the data required for their efficient fire ground use appears in the NFPA manual "Operating Fire Department Pumpers." — Ed.

"IN VIEW of the cheerless record of fighting fire with hydrant lines only, it is difficult to understand why instances continue to occur in which fire departments use multi-thousand-dollar pumping equipment only for hose carriers.

"Only recently in Kentucky a fire which originated in a small frame building was unsuccessfully attacked with relatively weak hydrant streams. The fire ultimately involved a number of other structures, and indications are that if adequate fire streams from pumpers had been applied promptly, the fire could have very likely been confined to the building of origin.

"In another case, a couple of years ago, fire-fighting operations were in progress for approximately 45 minutes before the several available pumpers were utilized and ineffective hydrant streams replaced with pumper streams. There have been a number of similar instances, although the results have not all been disastrous. It has been suggested — humorously, we trust — that the cost of fire department pumpers, like that of many other things, is now so high that any thrifty community will conserve this equipment to the utmost in order to prolong its life.

"We suspect, however, that the real reason for the risky practice of not utilizing pumpers lies less in the spirit of frugality than in the lack of

a real appreciation of the limitations of direct hydrant streams.

"It is uneconomical and impractical to maintain pressures in a municipal water distribution system adequate to provide effective direct hydrant streams except in rare instances. In general, the water works systems in Kentucky are designed to provide domestic requirements at satisfactory pressures, leaving adequate fire streams to be developed by means of fire engines or pumpers brought to the spot by the fire department. The reasons for this will be obvious if a few hydraulic facts are considered.

"To obtain a reasonably adequate fire stream having a reach (horizontal travel distance) of sixty to eighty feet, an average nozzle pressure of 50 pounds per square inch is required. As the water travels through the hose line, fittings and nozzle, it encounters resistance which is known as friction loss.

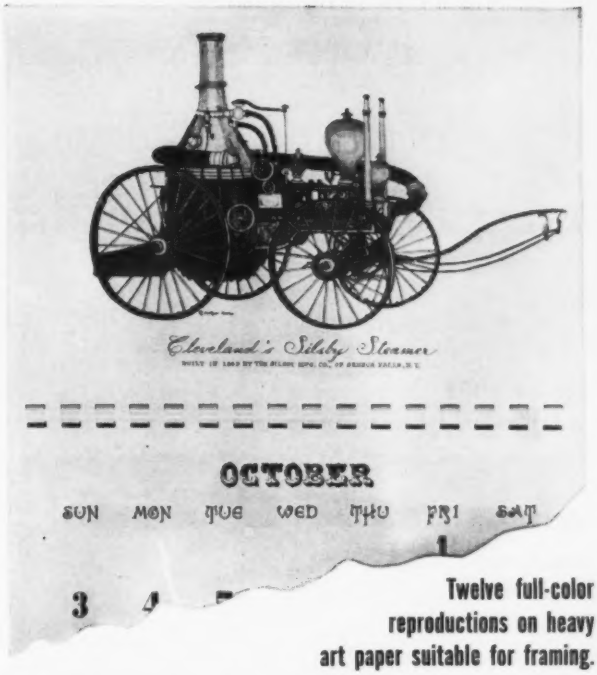
"For instance, an effective hose stream of 260 gpm, flowing through 100 feet of 2½-inch average-age fire hose, will probably lose 16 pounds per square inch pressure as a result of this friction — in the best grade new hose, this loss may be 12 or 13 pounds. Thus, in an average run of hose of, say, 500 feet, approximately 130 pounds pressure must be maintained at the hydrant or pumper in order to produce 50 pounds nozzle pressure with the required 260 gpm flowing.

"If the hose happens to be used from the roof of a two-story building, an additional 10 pounds or more (average 5 pounds per story) or a total of 140 pounds initial (not static) pressure would be needed.

"There are practically no water systems in the State capable of maintaining such pressures directly from hydrants. Hence, the importance of connecting pumpers to hydrants immediately if effective fire streams are to be expected.

"It is evident that a city which has pumpers, but does not use them properly, seriously lessens its ability to produce effective fire streams and thereby reduces its fire-fighting strength. The prompt connection of pumpers should be made a standard procedure on every response and should be as automatic a practice as response to an alarm."

A CENTURY OF FIRE ENGINES



Twelve full-color reproductions on heavy art paper suitable for framing.

By special arrangement with the publisher, we offer you the FIRE ENGINE EDITION of the famous EVELYN CURRO CALENDAR for 1954, showing twelve ancient fire engines in authentic colors, dating from the early 1800's. Pictures are 8½" x 6" and carry no advertising. Every Department should have this historical series. Price, $1.50, sent prepaid on receipt of money order or check. Order early, to be sure of your copy.

CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.

CAIRNS HELMETS SINCE 1836

POWHATAN

Wishes You A

Merry Fire Safe Christmas and Prosperous New Year

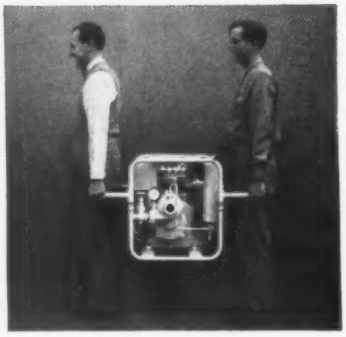
SERVING MUNICIPAL AND INDUSTRIAL FIRE PROTECTION CONSTANTLY SINCE 1892

POWHATAN BRASS and IRON WORKS
RANSON, WEST VIRGINIA
Phones 93 & 94 Charles Town, West Virginia
Established 1892

3 WORKHORSES for YOU
With Amazing Performance

HALE Portable Pumping Units

	U. S. Gallons Per Minute	Disch. Press. Lbs. Per Sq. In.
FZZ	60	90
	100	70
FZ	50	60
	300	10
HPZZ	15	200
	50	100



These 3 pumping "Workhorses" provide amazing volumes and pressures for efficiently fighting a great variety of fires. All three units are conveniently portable by two men; can be easily mounted or carried on any type of apparatus for fighting fires while in motion from booster tank; often used to pump from inaccessible water source into major pumper, or to fight fires direct.

Write today for Circulars on Models FZZ, FZ and HPZZ—at least one of which is sure to meet your fire fighting requirements. Ask for demonstration; no obligation.

Fire Pumps in All Standard Capacities

HALE FIRE PUMP CO.
Conshohocken, Pa.

A Time-Motion Study

(*Continued from page 10*)

to reach the booster reel. Then, before he can take the hose to the fire, he has to climb down off the wagon.

The wye should be held by a spring clamp on a wooden block on the right rear step on those wagons where there are two 1½-in. hose compartments separated by a 2½-in. or 3-in. hose compartment. On wagons where the two 1½-in. line compartments are side by side, the wooden block holding the wye should be placed on the rear step directly in front of the 1½-in. lines. In each case the block should be bolted to the rear step as near to the edge of the step as possible. (See diagram.)

In cases where there are three compartments in the hose bed of a wagon, all hose should be packed on its narrowest side in the conventional manner. However, where only two compartments are feasible, one must store 3-in. hose and the other compartment both 1½-in. lines. This can be done effectively with two lines each of 150 ft. or more by dividing the small compartment in half with a partition. Then, pack each 1½-in. line on its broadest side in one of the subcompartments. (See illustrations on pages 8 and 10.) Both 1½-in. fog nozzles should be on the top of the 1½-in. hose load.

The number of feet of 1½-in. hose which should be carried in these compartments can only be determined by the size of the compartments and the conditions under which each engine company generally operates. Often companies carry anywhere between 150 ft. and 300 ft. on each wyed 1½-in. line. The suggestion to pack 1½-in. hose on its broadest side was originally made by Robert C. Byrus, Director, Fire Extension Service, University of Maryland. It has proven to be an excellent method. The last 50 ft. of the 3-in. hose should be packed accordion fashion across the "U" shaped 3-in. hose load.

Let me urge fire fighters to give serious thought to the method of job study discussed here. It may be adapted to other problems requiring teamwork while fighting fire. It is through study of our problems that we can improve our service, make our work easier, and advance the science of fire fighting.

Membership Report

WITHIN the next few months thousands of fire departments and fire fighters will be renewing their membership in the NFPA. If your fire department joins or renews its membership, why not be certain that every member in the department has opportunity to subscribe to FIREMEN?

Simply show a copy of the magazine to each man and ask him if he would like a subscription at $1.25 per year. Such subscriptions may be obtained in any quantity providing they are requested at the time that a fire department or individual renews membership in the NFPA.

NFPA Welcomes:

The following fire chiefs and fire departments who have enrolled. Present fire department membership 2,105 fire departments, and 25,493 men.

Arizona: Miami Fire Dept., Miami.

California: Chief George Arens, Arbuckle Volunteer Fire Department, Arbuckle; Maxwell Fire Department, Maxwell; Chief J. C. Bailey, National City Fire Department, National City; Chief Robert Jerauld, Arden Fire District, Sacramento; Santa Ana Fire Department, Santa Ana.

Colorado: Aspen Fire Department, Aspen.

Illinois: Coal Valley Fire Protection District, Coal Valley; Downers Grove Volunteer Fire Department, Downers Grove; Glenbard Volunteer Fire Department, Lombard; North Riverside Firemen's Association, North Riverside.

Kentucky: Scott County Fire Protection Association, Georgetown.

Maryland: Hyattstown Volunteer Fire Department, Hyattstown.

Massachusetts: Paul R. Mullen, Forest Fire Department, Wrentham.

Missouri: Jefferson City Fire Department, Jefferson City.

Nebraska: Chief E. H. Reinsmuth, Gurley Volunteer Fire Department, Gurley.

New York: Breesport Volunteer Fire Department, Breesport.

Ohio: Chief Frank Tompkins, Morgan Twp. Volunteer Fire Department, Okeana.

Rhode Island: Cranston Fire Department, Cranston; Chief Abel S. Eldridge, Newport Fire Department, Newport.

Texas: McAllen Volunteer Fire Department, McAllen.

Virginia: Chief Claude M. Grace, Pennington Gap Fire Department, Pennington Gap.

Wisconsin: Chief Edward H. Kalk, Chippewa Falls Fire Department, Chippewa Falls.

THERE'S A FIRST TIME FOR EVERYTHING

MONITORADIO

MODEL FMC 1-L-6
Single Frequency 30-50 MC

MODEL FMC 1-H-6
Single Frequency 147-174 MC

NOT a Converter!
BUT a completely tamper-proof, self-contained receiver!

me a high quality
rolled receiver
h low cost!

Both of these units are invaluable as additional receivers for separate frequency channel monitoring to supplement 2-way radio communications systems. They are ideal as monitors of 2-way systems in mobile units not requiring a transmitter. Perfect for dispatching service cars, ambulances, trucks, buses, salesmen, civil defense personnel, special investigators, special police, volunteer firemen, fire truck units, taxicabs; for alerting industrial power and public utilities, forestry and railroad personnel, or use as a Walkie-Talkie monitor. They can be used for intercom between vehicles on two frequency systems. These are only a *few* of the uses that are limited only by the imagination! They are housed in durable, all metal cabinets. Simple to install, universal mounting...you have nothing to adjust! All units are shipped with crystal installed to order and aligned to frequency. Available in both 6 and 12 volt versions for 6 and 12 volt battery ignition systems.

For information on complete line of fixed and mobile communications receivers, write for form 22.

Burton brown advertising

•CHECK *signals!*

Take stock now . . . time to check your warning equipment to be sure of protection when you need it most. If your equipment hasn't proved more than satisfactory during the warm, summer days, it may fail you during the rainy or cold season. And, remember too, bad weather keeps people indoors . . . keeps car windows closed . . . that means you need *more* sound warning.

So, *now* is the ideal time to install the more powerful Federal Sirens or the additional Federal Signals you need. Don't delay . . . check your signals now. Get the protection you need from Federal now.

Write for Warning Signal Bulletin

FEDERAL ENTERPRISES, Inc.

Formerly: Federal Electric Company, Inc.

8717 S. STATE ST. CHICAGO 19, ILL.

for RUGGED DUTY!

MIDWESTERN PROTECTIVE CLOTHING

The overwhelming preference for Midwestern Protective Clothing is the result of outstanding performance when the going is tough and the chips are down. The superior quality, design, fabric texture and many exclusive features found in Mackinaw Coats and other Midwestern garments help increase your department's efficiency and provide extra protection for your men at the scene of the blaze.

PROTECTION COMFORT — SERVICE

You will find the type of fabric exactly suited to your needs in our wide selection of rubber materials. You can absolutely depend on the softness and flexibility of these high-grade materials to meet your most exacting requirements for lasting comfort, rugged service and greater efficiency on the job.

MIDWESTERN MFG. CO., Mackinaw, Illinois

Manufacturers of the Famous **MACKINAW Coats**

IAFC General Manager

ANNOUNCEMENT has been made of the appointment of Dr. John D. Gerletti to the position of General Manager of the International Association of Fire Chiefs, to succeed James "Ed" Jagger who recently resigned.

Dr. Gerletti is on leave of absence from the University of Southern California where he served as Associate Professor in the School of Public Administration. In that capacity he was Coordinator of the Fire Administration Program which was conducted with the cooperation of the University of Southern California and the Southern California Division of the California Fire Chiefs' Association.

Dr. Gerletti will assume his new duties on February 1, 1954, with offices at the IAFC Headquarters, Hotel Martinique, New York City, New York.

Oklahoma A&M Fire College

AS A result of a recent reinspection tour and survey by a committee from the Engineer's Council for Professional Development, the Fire Protection Course of the School of Technical Training at Oklahoma A&M College has again received accreditation. The Council is a national accrediting agency of engineering schools and technical institutes.

Staff members of the Oklahoma A&M Fire Protection Department include: R. J. Douglas, Professor and Department Head, member, NFPA Committee on Firemen's Training, Airport and Aviation Fire Protection, and Fire Inspection; W. Fred Heisler, Associate Professor and member NFPA Committee on Firemen's Training; Everett Hudiberg, fire protection specialist and member, NFPA Committee on Fire Department Equipment; George Orgain, Associate Professor, and W. C. Buck, Instructor.

Here's how this M·S·A "Mechanical Nose" sniffed out a fire before it started!

Reports of unexplained gasoline odors in a basement room of the 12-story Minneapolis Grain Exchange sent city Fire Department officials into action.

Order number one from Charles A. Johnson, fire prevention chief, cut off electrical equipment in the room—prohibited smoking in the area.

Preliminary inspection traced the gasoline vapors to a hollow stair-supporting post.

A hole was knocked in the stair wall and the air tested. The M.S.A. Explosimeter reading showed 10%. (A reading of 100% indicates an explosive mixture.)

Readings were taken from a hole in the floor—60%! Investigators, using the Explosimeter, began a search that wound through a four block area, and ended 150 feet from the Grain Exchange. Here, two 550-gallon gasoline storage tanks, in poor condition and leaking badly, were uncovered. The escaping gas, following the rock stratum, had found its way into the Grain Exchange. The tanks were removed, and a potentially disastrous explosion and fire was prevented.

THE M.S.A. EXPLOSIMETER

This device has proved its accuracy during use in routine inspections and in investigations of reported gas odors. In these services, the Explosimeter is helping Fire Departments everywhere do a better job of preventing fires caused by explosive gases and vapors. Its operation is simple, takes no special training. It is portable, light to carry, easy and inexpensive to maintain. Get the story today on the M.S.A. Explosimeter. Write, or call.

MSA
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STS., PITTSBURGH 8, PA.
At Your Service: 68 Branch Offices in the United States

MINE SAFETY APPLIANCES CO. OF CANADA, LIMITED
Toronto, Montreal, Calgary, Winnipeg, Vancouver, New Glasgow, N.S.
Representative in Principal Cities in Mexico, Central and South America
Cable Address "MINSAF" Pittsburgh

Call the M.S.A. man on your every safety problem . . . his job is to help you.

- For Sale -

Limited Number of Beautiful Lakefront Homesites in Florida

Here is a real opportunity to own your own homesite in Central Florida for only $99.50 down and $24.88 a month! Located near beautiful Clearview Lake in the natural, rolling setting of Carlton Village. Buy a homesite today for retirement tomorrow where you can enjoy your own garden, citrus trees, hunting, fishing and swimming. Get the facts about Carlton Village, newest development of 1200, completely planned homesites. Write for booklet to E. C. Huey, Drawer C-2, Lady Lake, Florida.

FIRE and POLICE UNIFORMS

SHIRTS
BADGES
CAPS
ACCESSORIES

RUSSELL UNIFORM

NEW YORK

RUSSELL UNIFORM CO.
192 Lexington Ave.,
New York 16, N. Y.

Please send free catalog checked below:

☐ Fire Department Uniforms and Equipment
☐ Police Department Uniforms and Equipment

Mr. .....
Address .....
City..... Zone.... State...

Getting That "Much-Needed Lift"

(*Conuinued from page 18*)

output to supply the ejector for keeping the tank full while the rest of the pump output is used for fire fighting purposes.

For high lifts, using a small pump rated at 25 gpm at 200 pounds pressure, tests indicated that one type of ejector lifting water at the rate of 9.5 gpm to a height of 138 ft.

For low lifts the same ejector lifted 32.8 gpm to a height of 69 ft.

In general the test work was conducted for high pressure low volume application of water for forest fire fighting. However, as indicated on page 19 of this issue of FIREMEN, ejectors of larger size have practical application where larger volumes of water are required.

Basic principles of ejector operation are important. Footvalves are necessary on the suction side of the ejector to prohibit any loss of water in the supply line to the pump tank. Spring closing footvalves have been found to be more desirable than the gravity type. It is essential that the supply line be kept full of water during drafting and that the proper nozzle tip be used on any line applied for fire suppression.

Another factor to consider is that the reserve water supply in the pumper tank must be adequate to fill the supply line to the ejector and to maintain the ejector in operation for the desired length of time. A table on this page indicates the amount of reserve water necessary for ¾-in. and 1-in. supply lines.

HERE are some other important fundamentals:

(1) Hose should be of adequate size to minimize friction loss.

(2) Lines should be kept straight, especially at ejector connections and at the point where the line empties into the tank.

(3) Strainers should be used on ejectors to minimize passage of dirt and sand into the pump tank.

(4) Suction end of ejector should be submerged at least 12 inches, to avoid creation of an air-funnel during suction operations.

(5) When a pumper is being operated to supply an ejector and at the same time supply a line for fire fighting, the nozzle tip on the discharge line should be of proper size in relation to the length of hose lay used. Partially closed shut-off nozzles on fire lines will help to control this flow. In addition, the pumper operator can regulate the valve on the discharge line to maintain proper pressure. When the pump tank is full, the supply line to the ejector can be shut off and the entire output of the pumper may then be used for the fire lines.

(6) Since water drains from the hose lines when the engine stops, use of a foot valve on the suction side of the ejector is recommended.

(7) To facilitate identification, each ejector should be stamped with its gpm capacity at operating pressure. Stamping should be done only on the thicker portions.

During the tests at the Arcadia Development Center seven types of popular makes of ejectors were rated. The table below shows the flows obtained from each type of ejector while ¾-in. and 1-in. supply lines and 1-in., 1½-in., and 2-in. discharge lines were used. Also included is the important reserve water supply needed per hundred feet of line to maintain the ejectors in efficient operation. Readers interested in descriptions of actual fire fighting operations in which ejectors were used successfully may find such incidents in stories in the June and August, 1946, issues of FIREMEN.

Table Showing Reserve Water Needed for Ejector Operations

Ejector Number	Pressure Inlet		Discharge		Reserve Water per 100 Ft.
	Maximum Flow GPM	Hose Size	Maximum Flow GPM	Hose Size	
1	9.3	¾"	16	1"	10
2	10.5	¾"	27.5	1½"	10
3	11.5	¾"	22.5	1½"	10
4	17.5	¾"	38.0	1½"	15
5	16.5	¾"	47.5	1½"	15
6	27.5	1"	59.0	2"	25
7	32.5	1"	87.0	2"	25

BOX ALARMS ARE POSITIVE ALARMS

Large city or small town — you need the advantages that a fumble-proof Municipal Fire Alarm System can give you.

The small community can get these advantages at an average annual cost of less than a dollar a person per box, including maintenance:

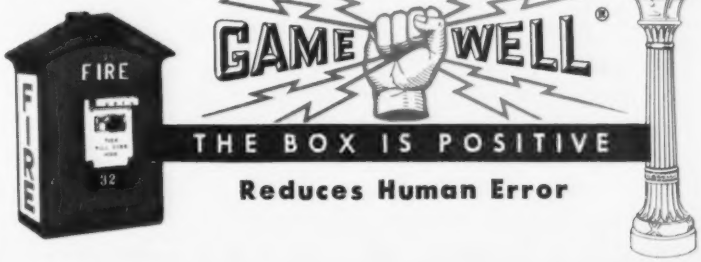
FAST, always accurate, alarm to the Municipal Fire Department keeps fire and water damage low.

LOWER insurance rates frequently result when a complete Fire Alarm System is installed by a community.

For the full story of safe, sure alarms with a Municipal Fire Alarm System, consult us on making a survey. The System can be started now, extended in years to come.

There is no substitute for the Municipal Fire Alarm System

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASS.
In Canada: Northern Electric Co., Ltd., Belleville, Ont.



BETTER HOSE CARE – WITH
CIRCUL-AIR
THE AIR CONDITIONING
FIRE HOSE DRYER

Circul-Air is the patented, electrically operated hose dryer which circulates prewarmed fresh air through coiled wet hose at the rate of 5 to 6 air changes per minute. It's designed to lengthen hose life, improve the appearance and functional design of new fire houses, and to save floor space and hard work. No other drying method is so fast — so economical — so easy to use.

Circul-Air Dryers have passed the Approvals Tests and are listed by the Underwriters' Laboratories, Inc., Chicago and the Canadian Standards Association.

Write for Catalog TODAY

THE CIRCUL-AIR CORPORATION
575 East Milwaukee Detroit 2, Michigan

INDEX TO ADVERTISERS

	Page
American District Telegraph Company	20
American-Marsh Pumps, Inc.	2
Cairns & Brother, Inc.	23
Carlton Village	28
Circul-Air Corporation	30
W. S. Darley & Company	6
Federal Enterprises, Inc.	26
Gamewell Company	29
Hale Fire Pump Company	24
Harodikes Incorporated	30
McCulloch Motors Corporation	5
Metcalf Brothers & Company	3
Midwestern Manufacturing Company	26
Mine Safety Appliances Company	27
Powhatan Brass & Iron Works	24
Radio Apparatus Corporation	25
J. P. Redington & Company	26
Rockwood Sprinkler Company	4
Russell Uniform Company	28
D. B. Smith & Company	22

What's New in Fire Equipment?

Say You Saw it in FIREMEN, when Writing to Advertisers.

Quick Change Proportioner

A new combination proportioner designed to introduce in proper proportion either mechanical foam liquid or a wetting agent has been developed by the National Foam System, Inc., West Chester, Pennsylvania. Descriptive literature may be obtained from the manufacturer.

Brochure on Spray Sprinklers

The Globe Automatic Sprinkler Company, 250 Park Avenue, New York 17, New York, has prepared a 14-page brochure which illustrates the company's new "spray" type of automatic sprinkler with a fusible element. Write to the manufacturer at the above address.

New Electric Generating Plant

Expanding their line of gasoline engine driven electric generating sets, D. W. Onan & Sons, Inc., Minneapolis, Minn., has announced a new 50KW, 62.5 KVA electric plan, Model 50KA. Write to the manufacturer at the above address for Form A-301.

Folder on Rescue Trucks

Illustrations of a variety of squad, rescue and emergency trucks for fire departments are contained in a four-page folder released by the Sharpsville Steel Fabricators, Inc., Sharpsville, Pa. Get your copy from the manufacturer.

Panic Exit Devices

Fire prevention authorities will find useful information on approved fire and panic exit devices in the new 52-page catalog No. 53V just released by Von Duprin, Division of Vonnegut Hardware Co., Indianapolis 9, Indiana. Write manufacturer for your copy.

Safety Candles

Fire safety in candlelight processions may be better obtained if electric, instead of wax candles are used. Information on safety battery candles, changeable to four different colors, may be obtained from Louis J. Lindner, 153 W. 33rd Street, New York 1, New York.

Portable Generators and Pumps

A new 4-page, 2-color booklet describing carryable generators and pumps may be obtained free of charge by writing to Phillip J. Halperin, Homelite Corporation, Port Chester, New York. Ask for Booklet L-703.

First Aid Kit Containers

Redesigned containers for "Type D" first aid kits of Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pennsylvania, are illustrated and described in a new 2-color folder, free copies of which may be obtained from the manufacturer.

Catalog on Back-Pack Pumps

Descriptive catalogs on Indian Fire Pumps, now electric seam welded, will be sent to anyone requesting them from D. B. Smith & Company, 408 Main Street, Utica, New York.

Uniform Fabrics

Fire fighters planning to purchase new uniforms can get sample brochures of fabrics upon request to Metcalf Brothers & Company, 45 East 17th Street, New York, New York.

Fire Pumps

Circulars describing Models FZZ, FZ, and HPZZ pumps manufactured by the Hale Fire Pump Company, Conshohocken, Pennsylvania, are available without charge by writing to the manufacturer.

WATER when and where you want it!
with HAREDIKES
Portable Canvas Water Tanks
THE ECONOMICAL AND EFFICIENT WAY TO CARRY AND STORE WATER.
ON THE JOB - ON THE SPOT
KEEPING AMERICA GREEN

EXCLUSIVE FEATURES
- Self Supporting
- Easily Back-packed
- Ideal for Relay Pumping
- Easily Transported

Available in 150 & 300 gallon sizes

A WATER SUPPLY AT THE SCENE OF THE FIRE

Write TODAY for Full Information and Price List
HARODIKES INCORPORATED
NORTH DIGHTON, MASSACHUSETTS

Index to Firemen, Volume 20, 1953

	Month	Page
A-Bomb Effects, Film	Nov.	25
A-Bomb Explosion	May	12
Aircraft Chart	Sept.	41
Anemometer, Benton Harbor	Aug.	19
Bomber Crash	Sept.	24
"Bright Red Rooster"	July	20
British Film, A-Bomb Effects	Nov.	25
British Fire Tests	Nov.	24
Buildings, Fire Grading of	Apr.	31
Burns, Treatment of	Aug.	8
Canadian Apparatus "Specs"	Oct.	8
"Chuck," Hydrant	June	17
Civil Defense, "Manageable"	Feb.	32
Competitive Firemanship	Feb.	18
Contagious Diseases, Handling	Jan.	14
County Control Center	June	12
"Dacron" Fire Hose	Nov.	21
Denver, Colo. Fire Protection	Sept.	14
Directory, N. Y. Radio	June	29
Diseases (See Contagious)		
Donut Load for 1½-in. Hose	Oct.	18
Donut Load for 1½-in. Hose	Nov.	19
Drill Tower Evolutions	May	10
Edits:		
Anniversary of FIREMEN	Oct.	7
Boston Ladder Rescues	Aug.	5
Cleveland Sewer Explosion	Oct.	7
Coordinated Mutual Aid	Aug.	5
Country Club Fire	June	7
Fire Protection in Hospitals	Oct.	7
Flammable Liquid Tanks	Mar.	9
Liquefied Petroleum Gas Storage	May	9
Longevity Pay	Sept.	11
Maritime Fire Chiefs Assoc.	Sept.	11
NFPA Statement on Ladders	July	7
Rekindles from Hot Topics	Nov.	7
Volume *vs.* Pressure	Nov.	7
Washington, D. C., Fire	Feb.	9
"With Their Boots On"	Apr.	9
Eductors	Dec.	19
Ejectors	Dec.	18
Exposures, Protecting	Mar.	14
Engine Maintenance	Oct.	12
Farm Fires, Fighting	Oct.	22
FDIC Meeting	April	10
Fibre Glass Hose	Nov.	16
Fighting Rural Fires	May	16
Films:		
A-Bomb Effects	Nov.	25
Forest Service	Sept.	58
"Punch and Trudy"	Nov.	20
Fire Casualty Statistics	Oct.	14
Fire Departments:		
Albion, Pa.	July	18
Allison Park, Pa.	April	22
Alpena, Mich.	April	22
Benton Harbor, Mich.	Aug.	19
Burke, Va.	March	19
Bushnell, Ill.	Oct.	16
Cambridge, Mass.	April	20
Centre Twp., Ind.	Jan.	24
Cornwall-on-the-Hudson, N. Y.	April	23
Denver, Colo.	Sept.	14
East Deer Twp., Creighton, Pa.	Jan.	25
Gettysburg, Pa.	Nov.	17
Hanover, N. H.	March	19
Idyllwild, Calif.	June	20
Laurel Springs, N. J.	Oct.	28
McKinley, Pa.	Feb.	22
Memphis, Tenn.	April	16
Memphis, Tenn.	April	21
Memphis, Tenn.	May	11
Miami, Fla.	Jan.	18
Millington, Md.	April	22
Morgantown, W. Va.	June	21
Mount Airy, Md.	Jan.	25
New Hamburg, N. Y.	Feb.	15
Omaha, Neb.	Sept.	17
Portland, Ore.	Sept.	38
Providence, R. I.	Sept.	26
Pueblo, Colo.	Aug.	14
Rochester, N. Y.	Aug.	6
Rockford, Ill.	Aug.	14
Rockford, Ill.	Oct.	26
Saginaw, Mich.	Sept.	20
Salt Lake City, Utah	Nov.	8
Seaside, Calif.	March	19
Sioux Falls, S. Dak.	Aug.	14
South Portland, Me.	Feb.	12
Stephens, Ark.	May	29
St. Louis, Mo.	April	17
St. Louis, Mo.	May	28
St. Louis County, Mo.	April	22
Stirling, N. J.	Feb.	15
Talleyville, Del.	July	18
Taos, N. Mex.	April	18
Thorold, Ont.	June	20
Tolleson, Ariz.	April	22
Toronto, Ont.	Sept.	12
Trevose, Pa.	Feb.	15
Trona, Calif.	May	26
Tucson, Ariz.	March	19
Warsaw, Ind.	Jan.	24
West Colesville, N. Y.	June	20
West Milton, Ohio	April	22
Williamsburg, Va.	Oct.	10
Fire Experience, British	Nov.	32
Fire Experience, U. S. Army	Aug.	20
Fire Foto Contest Winners	May	22
Fire Potential of Cities	Nov.	21
Fire Prevention:		
Los Angeles, Calif.	April	24
Ohio, Rural	July	12
Week	Sept.	18
Week Contest	Nov.	23
Week Contest Winners	Feb.	10
Fires:		
Aiken, S. C. Stores, gas explosion	March	18
Atlantic City, N. J. Hotel	May	24
Baltimore, Md. Waterfront	April	19
Baltimore, Md. market buildings	July	11
Belleville, Ill. bus repair shop	April	19
Bellows Falls, Vt. plastic mfg.	Jan.	17
Beverly, Mass. zirconium plant	March	20
Boston, Mass. apt. house	Aug.	5
Boston, Mass. apt. house	Sept.	19
Boston, Mass. bridge	Dec.	20
Bound Brook, N. J. bakelite plant	Feb.	24
Burbank, Calif. lumber yard	June	13
Cambridge, Mass. gas bottling plant	Feb.	24
Charlestown, Mass. pier	July	11
Chicago, Ill. furniture store	Feb.	9
Chicago, Ill. extinguisher factory	March	18
Chicago, Ill. metal mfg.	June	13
Cleveland, Ohio lumber yard	Oct.	25
Columbus, Ohio oxygen cylinders	July	11
Dallas, Texas skyscraper	June	24
Darien, Conn. dwelling	Sept.	45
Davisville, R. I. oil storage tanks	March	9
East Orange, N. J. church	Feb.	24
Elsinboro Point, N. J. ship collision	Aug.	11
Eureka, Calif. tire recapping plant	July	11
Fresno, Calif. multiple fires	Sept.	30
Grand Prairie, Texas country club and museum	June	7
Grand Rapids, Mich. gasoline truck collision	Sept.	46
Hillsboro, Mo. nursing home	Jan.	19
Houston, Texas fireworks factory	Aug.	11
Indianapolis, Ind. phosphorous grenades	Nov.	30
Iowa City, Ia. college	Dec.	17
Jersey City, N. J. match warehouse	Aug.	11
Kansas City, Mo. business block	Feb.	24
Kansas City, Mo. apt. house	June	13
Largo, Fla. nursing home	May	15
Lewiston, Me. exposition bldg.	March	13
Liberal, Kan. wooden bridge	Oct.	25
Little Falls, N. Y. gasoline trailer & dwellings	March	18
Livonia, Mich. GM transmission plant	Sept.	46
Los Angeles, Calif. petroleum plant	June	13
Marquette, Mich. store	June	13
Minneapolis, Minn. research laboratory	April	19
Moncton, N. B. warehouse	May	24
Morgan City, La. gas wells	March	18
Nederland, Texas oil cracking unit	Jan.	17
Newark, N. J. aircraft fuel	April	19
Newark, N. J. brewery	May	24
New Marshfield, Ohio church	Sept.	46
New Marshfield, Ohio, business block	May	24
New Orleans, La. feed mill	July	11
New York City, N. Y. warehouse	Jan.	19
New York City, N. Y. furniture store	Feb.	24
New York City, N. Y. furniture factory	April	19
New York City, N. Y. Jamaica race track	June	13
Old Town, Me. hotel	May	24
Panama City, Fla. machinery corporation	Feb.	24
Pawtucket, R. I. church	March	18
Peabody, Mass. chemical plant	June	16
Philadelphia, Pa. paper box plant	March	18
Philadelphia, Pa. manufacturing building	April	19
Philadelphia, Pa. defense warehouse	Aug.	11
Philadelphia, Pa. burlap bag factory	Oct.	25
Philadelphia, Pa. rubber warehouse	Sept.	49
Pittsburgh, Pa. dwelling	Feb.	24
Providence, R. I. warehouses	Nov.	28
Pueblo, Colo. business block	Oct.	25
Quebec City, Que. newsprint warehouse	Aug.	11
Reno, Nev. motel	Jan.	22
Rockland, Me. conflagration	Jan.	9
Rockland, Me. conflagration	Feb.	20
Saginaw, Mich. warehouses	Nov.	28
Sansom Village, Texas fireworks factory	Aug.	11
Sault Ste. Marie, Mich. lumber yard	July	27
Sault Ste. Marie, Ont. dwelling	July	27
Shreveport, La. paper warehouse	March	18
St. Mary's, N. B. church	March	24
St. Neree, Que. conflagration	Aug.	11
Syracuse, N. Y. gasoline plant	Aug.	11
Toronto, Ont. manufacturing plant	July	11
Toronto, Ont. hardware store	Oct.	25
Union City, N. J. super market	Jan.	17
Washington, D. C. tire and battery store	June	8
Watervliet, N. Y. woodworking buildings	May	24
Westport, Mass. dwelling	Jan.	17
Wheeler, Ind. barn	Nov.	28
Whittier, Alaska military port	Aug.	11
Wichita Falls, Texas stores	Jan.	17
Wilmington, Calif. gasoline tanks	Oct.	25
Windsor, Ont. lacquer mill	July	7
Fire School, Cons. Edison	Nov.	11
Fire Spread	July	18
"Fire Station Design"	Sept.	54
Fireworks Law in Conn.	July	22
Fire Tests, British	Nov.	24
Fog: Chicken Brooder Fire	March	12
Dwelling Fire	Sept.	25
Lloyd Layman's Talk	July	22
Nozzle Studies	March	16
Forest Fires, New Hampshire	Sept.	28
Gas Masks:		
Miami, Fla.	Jan.	18
Ohio Law	Sept.	35
St. Louis, Mo.	April	17
Gas Turbine Portable Pump	Aug.	10
Hay, Spontaneous Ignition	Aug.	7
Hay, Spontaneous Ignition	Nov.	28
Hose: "Dacron"	Nov.	21
Donut Load	Oct.	18
Glass Fibre	Nov.	16
Streams, Variations	Nov.	18
Hydrant "Chuck"	June	17
IAFC Conference	Sept.	12
Inspections: Portland, Ore.	Sept.	38
Providence, R. I.	Sept.	26
Saginaw, Mich.	Sept.	20
Jones, Clark F.	May	27
Kearney, Paul W.	Aug.	15
Kodak Park Fire Protection	Sept.	22
Ladder Failure at Fire	Jan.	17
Ladder Maintenance	April	14
Ladder Maintenance	May	22
Ladder Rescues, Boston	Sept.	19
Ladder Ruined in Fire	March	10
Life Net Catch	May	28
L. A. Fire Prevention	April	24
Making a Good Job:		
Heavy Duty Engine Company	May	14
Hose Capacity	Nov.	11
Nozzle Pressure and Flows	Feb.	19
Protecting Exposures	March	14
Maintenance:		
Aerial Ladders	April	14
Aerial Ladders	May	22
Apparatus Engines	Oct.	12
McCarthy, Chief John J.	Nov.	36
NFPA Annual Meeting	July	16
NFPA Regional Meeting	Oct.	11
Nozzle Controlled Pump	Nov.	26
N. Y. County Activities	Oct.	28
Occ. Hazards of Fire Service	June	14
Occ. Hazards of Fire Service	July	14
Occ. Hazards of Fire Service	Aug.	12
Ohio Training Unit	July	13
Omaha's Rescue Squads	Sept.	35
Pensions, Firemen's	Jan.	10
Portable Pump, Gas Turbine	Aug.	10
Pump Bodies, Aluminum	Feb.	30
Pump, Nozzle Controlled	Nov.	26
Pumper Relay Studies	Jan.	13
Rescue Squads, Omaha	Sept.	17
Rotary Club Programs	Nov.	21
Rural Inspection	Dec.	15
Rural Fire Fighting Outline	May	16
Rural Fire Prevention, Ohio	July	12
Salt Lake City Fire Dept.	Nov.	8
Salvage, Rockford, Ill.	Oct.	26
Schuette, Robert W.	July	27
Sewer Explosion, Cleveland	Oct.	11
"Smokey Stover" Comic Book	Aug.	24
So. Portland, Me. Training	Feb.	12
"Sparky" in Exhibit	Nov.	31
"Sparky" on Television	Nov.	23
"Specs" in Canada	Oct.	8
State and Prov. Training	Nov.	12
Supply Lines and Nozzle Tips	Sept.	45
Time-Motion Study	Dec.	8
Training:		
Evolutions at Memphis	May	11
Mobile Unit in Ohio	July	13
Ohio Manual	Oct.	15
Pump School, N. C.	Sept.	31
State and Provincial	Nov.	12
Treatment of Burns	Aug.	8
Tri-State Meet	Nov.	22
U. S. Army Fire Experience	Aug.	20
Variations in Hose Streams	Nov.	18
Walsh, Chief Ed.	Nov.	30

FIREMEN
60 BATTERYMARCH ST.
BOSTON 10, MASS., U. S. A.

Sec. 34.65 (d) P. L. & R.
U. S. POSTAGE
PAID
Permit No. 766
Boston, Mass.

Tennesee Valley Authority
Technical Library
Knoxville Tenn.

POSTMASTER: If undeliverable FOR ANY REASON, notify sender, stating reason, on Form 3547.

Get This $13.50 "Fireground Library"

ATTACKING and EXTINGUISHING INTERIOR FIRES
OPERATING FIRE DEPARTMENT PUMPERS
FIRE FIGHTING TACTICS
Handling Hose and Ladders
A Pictorial Training Manual

for only

$9.75

Including:

"Attacking and Extinguishing Interior Fires" — Cloth bound, 134, pages, illustrated. (Single copy price **$3.75**)

"Fire Fighting Tactics" — Cloth bound, 112 pages, illustrated. (Single copy price **$3.75.**)

"Operating Fire Department Pumpers" — Cloth bound, 148 pages, illustrated. (Single copy price **$3.50.**)

"Handling Hose and Ladders" — New cloth bound Civil Defense edition, 190 pages. A pictorial manual. (Single copy price **$2.50.**)

Total price of single copies is $13.50 . . .
You get this handy book pack for just $9.75

Christmas is coming! These four volumes on fireground action will make an ideal gift for any fire fighter. Mail your order now to assure early delivery.

Important principles governing effective fireground action are thoroughly explained in these four books. "Attacking and Extinguishing Interior Fires" and "Fire Fighting Tactics," (both by Lloyd Layman, former chief of the Parkersburg, West Virginia, Fire Department), present case histories and explanations of the effective use of water fog in fire fighting, and suggest operational planning procedures and tactics. "Operating Fire Department Pumpers" is important to every fire officer. It is especially useful for training pumper operators and contains new data on pumper relays and hydraulic formulae. "Handling Hose and Ladders" is the new cloth bound edition of the pictorial training manual, with an added section on handling pompier ladders.

FB-12-53

ORDER FORM

NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch Street
Boston 10, Massachusetts

Please send me.....sets of the "Fireground Library" at $9.75 per set.

Name .....

Address .....

City..... **County**.....

State or Province..... **Country**.....

☐**Check enclosed** ☐**Please send bill**

Handy container for desk, drawer or glove compartment!

Included in this book pack offer is a strong, attractive casing which holds the four 5½ x 8½ in. volumes securely. On your desk it provides a miniature "library" at your fingertips. In a drawer, or in the glove compartment of your car, it will protect the books from damage and still allow you to reach any volume quickly for reference.

Get this $13.50 book pack for just $9.75 today